TECHNOLOGY DEPT.

First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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PUBLIC LIBRARY JUL 19 1932 DETROIT

Production During 1932 Estimated at Minimum Of 1,572,000 Vehicle Units

Many Factors Serve to Confuse Outlook; Ford Production Holding Firm, Late Summer Plans Are Vague

New York, July 15.—With the figures covering production during the first half of 1932 showing a grand total of 912,000 vehicle units as the world output of our industry, speculation is general as to what the total for the year will be. There are many difficulties in the way of forming a convincing estimate.

In the first place, the late arrival of Ford as a heavy producer has shifted the normal peak in both production and sales. On the other hand, most other companies are following the normal trend in tapering off after May.

We know that Ford produced 76,000 units in May and 95,000 in June. While there has been no definite announcement from the Ford Motor Company as to its July schedule, the general belief is that total production will fall a litte short of June, probaby running between 80,000 and 85,000 vehicles. It is further believed that Ford production in August will slip off again slightly to perhaps 75,000, with September standing at somewhere around 60,000 units.

We would seem to be conservative in estimating Ford production in the last six months of the year at 80,000 for July, 70,000 for August, 60,000 for September and 50,000 each for the last three months. This would give us a Ford total for the last half year of 360,000 vehicle units. This maker started his production drive with an announced backlog of orders of 350,000 and this has not yet been entirely filled. It is reasonable to assume that the Ford dealers will dig up 181,000 additional orders during the six months and this would account for the company's total, due consideration being given to the backlog.

During the final six months of 1931 the companies other than Ford produced approximately 600,000 units. If we cut this in half we get an output of 300,00 vehicles and this added to the Ford total of 360,000 gives us a production total for the six months of 660,000 units. On this basis the production total for 1932 would be 1,572,000 vehicle units.

We believe this estimate errs on the side of conservatism, but it may serve as a measuring stick until further returns give a better basis for estimating.

OIL FIRMS FORM CORPORATION TO POOL PATENTS

New York, July 15.—In order to surmount difficulties arising from diverse ownership of related and complementary patents for refining petroleum, Standard Oil Company of New Jersey, Standard Oil Company of Indiana, the Atlantic Refining Company and Foster Wheeler Corporation have joined in the formation of a new company to make the refining processes and patents available to the entire oil industry.

The new company is known as Petroleum Distillation Corporation, incorporated in Delaware, with an authorized capital of 2,000 shares of no par value stock. All of this stock will he held in proportion to the interest of each by the two Standard companies, Atlantic Refining and Foster Wheeler.

Each of the four organizing companies will grant, or pool, their licensing rights to the common agent, which in turn will deal with outside oil companies seeking to obtain manufacturing licenses for the

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NO TRACE OF HALE, FORD CO. OFFICIAL, MISSING IN CANADA

Montreal, July 15.—Hope for discovery alive of George S. Hale, general superintendent of the Montreal plant of the Ford Motor Company of Canada, is gradually fading. Hale was last seen fishing in Rough River, near Lascension, Que., at 10 o'clock Sunday morning.

Since then posses of searchers, aided by police dogs, seaplane and diver, have failed to locate him, but every part of the river will be explored before the search is abandoned.

Hale started an automobile trade career in Southport, England, his native city, as an apprentice with the Cunliffe firm. Later he joined the mechanical staff of the Ribot Motor Works in Southport, afterwards moving to Darwin in the same field.

Coming to Canada in 1910 he was associated with motor industries in Belleville, Ont., and Toronto. In 1914 he entered the Toronto branch of the Ford Motor Company of Canada as a mechanic. Four years later he was promoted to foreman and in 1926 was appointed superintendent of the Montreal branch.

FISHER BODY GUILD TO AWARD STATE PRIZES ON JULY 20

New York, July 15.—The high spot of the year is approaching for members of the Fisher Body Craftsman's Guild, whose handiwork in the guild's $75,000 coach building competition composes the exhibit at the American Museum of Natural History here this month.

That high spot will be reached, for most of the state entrants, on the night of July 20, when, with all of the models judged, guild officials will announce the state winners.

The guild has two age groups, one

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Ford and Hudson Production At Higher Level in Past Week

Pending New Line Spurs Hudson Plant to Supply Dealer Samples; Ford Starts Building Replacement Parts

By CHRIS SINSABAUGH

Detroit, July 15.—Looking back over the week just ended, Hudson and Ford have enjoyed the production limelight. Essex is responsible for increased activities at Hudson, occasioned by the necessity of getting the new job under way.

There's been overtime out on East Jefferson, for it is necessary not only to have 2,000 units ready for the giant driveaway set for Thursday of next week, but because of having to stock the small army of distributors and dealers so they will be in position to make early deliveries.

Ford is showing no signs of slowing up, according to the gossip around town. With nothing official coming out of Dearborn, the estimators figure it that Ford will have turned out 17,500 in five days' operation this week. It is reported that at least three-fourths of the production is the eight. It is said that there are plenty of the fours in stock, but the demand for the eight is keeping 'em humping out River Rouge way.

As I get it, Ford is speeding up rather than slowing down and it is said that by the first of the month production will be up to about 4,000 a day. On top of this, it is said that for the first time Ford is beginning to stock up on replacement parts. Up to now it has been impossible to get ahead on this, but now it is said 20 per cent. of the stuff he is buying from parts makers is going into the bins for replacement purposes.

While production on the whole is slowing down materially, it would

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N. S. P. A. SURVEY SHOWS TURNOVER RATE NON-VITAL

Detroit, July 15.—That the rate of stock turnover is of less importance to the automotive parts, tools and equipment jobber than is commonly supposed, is brought out in the summary of, and comments on an internal management questionnaire recently issued by the Marketing Research Department of the National Standard Parts Association and replied to by fifty-one N. S. P. A. jobbers.

"Turnover," the report states, "is vital in a business where margins are more or less fixed by purchase and resale schedules and where sales are made to only one class of trade. But the automotive jobber may vary his resales according to his competition and the class of trade sold, whereby he buys practically all of his merchandise on a fixed margin from list."

The report brings out that the important point is for the jobber to concentrate his efforts on the retention of just as much as possible of the discount allowed him by the manufacturers from whom he buys rather than resorting to longer discounts as the easiest way, at the moment, of maintaining or increasing volume.

Referring to a tabulation indicating cash discounts taken by jobbers as a percentage of net sales, arranged in six groups, according to sales volumes. The report says, "The importance of the cash discount taken by jobbers for prompt payments to manufacturers may be emphasized by pointing out that in many instances the difference be-

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CRUDE RUBBER HAS 34% GAIN FOR JUNE; TWO YEAR RECORD

New York, July 15.—Consumption of crude rubber by manufacturers in the United States for the month of June amounted to 39,116 long tons as compared with 29,197 long tons for May, 1930, according to statistics released by the Rubber Manufacturers Association today.

This organization reports imports of crude rubber for the month of June to be 41,394 long tons, an increase of 28.5 per cent. over May, 1932, but 9.6 per cent. below June a year ago.

This association estimates total domestic stocks of crude rubber on hand June 30 at 345,702 long tons, which compares with May 31 stocks of 346,231. June stocks show practically no change as compared with May of this year, but were 53.3 per cent. above the stocks of June 30, 1931.

The participants in the statistical compilation report 43,079 long tons of crude rubber afloat for the United States ports on June 30. This compares with 50,453 long tons afloat on May 31, 1932, and 52,066 long tons afloat on June 30, 1931.

FIGHT ON HIGHWAY TRANSPORT TAXES PLANNED AT MEETING

Washington, July 15.—Observers here consider that the Highway Users' Conference, of which Alfred P. Sloan, Jr., president of General Motors, is chairman, will be a potent factor in the fight against further discriminatory taxation on highway transportation in general. Members of the advisory committee held a meeting in this city recently and formulated plans for an aggressive fight against further tax levies which will tend to affect adversely all forms of highway transport. The conference has been joined by national farm, bank and publishers groups, which are uniting with the automotive industry to fight unjust taxation on highway transport.

At this meeting several instances were brought out of bills introduced and to be presented in various states for the diversion of gasoline taxes from road construction to other purposes. In Pennsylvania bills have been presented that would divert gas tax funds to unemployment relief and others that would increase present levies.

Proceeding immediately to organize for a powerful attack against these continuing exactions, the committee elected Alfred P. Sloan, Jr., National Automobile Chamber of Commerce, chairman; Ernest N. Smith, American Automobile Asso-

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JUNE CAR SALES IN INDIANAPOLIS SET HIGH FOR YEAR

Indianapolis, Ind., July 15.—June new car registrations for Marion county (Indianapolis) released by the Indianapolis Automobile Trade Association show that month's total to be the highest point of the year.

The rise of the Ford figure had much to do with the trend which is contrary to custom, June ordinarily marking a further summer decline after passing the peak in March or April. Never in recent years has the high point in new car sales appeared as late in the year as June.

Auburn's "back to jobs" drive likewise aided materially in keeping registrations from the downward path, that company's business in June being nearly four-fold of the previous month.

While some dealers claimed their

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SEARS TIRE PRICES REMAIN UNCHANGED; TAX TO BE ADDED

Chicago, July 15.—Automobile tire prices in Sears-Roebuck's new fall and winter general catalogue show no change from prices in the mid-summer flyer catalogue.

The tire section of the catalogue, which was printed before the Federal tire and tube tax was fixed, carries the following statement:

"The government is considering adding a tax on tires and tubes Therefore all tire and tube prices are subject to any tax which may be added."

The wording of the statement indicates that Sears had originally intended to raise tire and tube prices fairly promptly after the tax went into effect, but deferred doing so because of developments in the tire industry.

As a result of more liberal dating terms offered by manufacturers, independent dealers are understood to have accumulated considerable stocks of tax-free tires prior to the tax date, and mail-order companies, in view of this situation, were unwilling to raise prices until assured

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Prize Winning Letter in A. D. N. Contest—See Page 3

DETROIT REPORTS GIVE ALLEGED DETAILS OF NEW HUDSON VEHICLE

Detroit, July 15. — Automotive circles in this city are considerably steamed up over the forthcoming launching of a brand new, low priced car by the Hudson Motor Car Company. The interest is obvious when it is considered that this event marks the appearance in the lowest price bracket of a company that is practically in the pioneer group and which has not before attempted to compete in this price division.

Naturally there are many stories flying about Detroit as to just what the new car will be. It is claimed that the chassis will have a wheelbase of 102 inches and that the power plant will be a six cylinder unit, developing 68 brake horsepower. It is also claimed that the car will be lighter than anything now on the road, 1,900 pounds being mentioned as the weight of one model. The price is popularly given as a $425 base. Some alleged insiders say that the new Hudson infant is going to be christened "Jackson."

In the meantime the Hudson organization is keeping its own counsel, except for announcing that the new car will be presented officially on July 21 and that 2,000 of the vehicles will be driven away over the roads by dealers in a monster driveaway on that date. The Hudson plant is running full speed ahead with 10,000 men working and a generous amount of c ertime being employed.

FISHER BODY GUILD TO AWARD STATE PRIZES ON JULY 20

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for boys from 12 to 15 inclusive, and the other for boys from 16 to 19 inclusive. In each of these groups the boy who has built the finest model coach will be sent to the Detroit convention of guild winners, August 22 to 24, to compete for the international awards which will be presented at that time. This winner will also receive $100 in gold, as will each of the two runners-up. Besides this, sixteen other purses, ranging from $15 to $25, will be distributed among those whose work is scored highest by the judges.

International awards, this year as last, will consist of four university scolarships of four years each. These were won last year by Raymond S. Doerr of Battle Creek, Mich.; Donald C. Burnham of West Lafayette, Ind; Howard Jennings of Denver, Col. ,and Albert Fischer of Waukegan, Ill. Doerr and Fischer are studying engineering in the universities of Michigan and Illinois respectively, while the $5,000 principal of the award has been invested for Jennings and Burnham, pending their completion of high school courses.

ADJUSTABLE BEARING SOLD AT AUCTION

Crawfordsville, Ind., July 15.—In May, 1932, on complaint of First National Bank of Crawfordsville, Ind., the Crawfordswille Trust Company was appointed receiver of Adjustable Bearing Company. This corporation, owning an enterprise for the manufacture of some woodworking devices and bearings for automobiles, operated by Claude A. Maris, originally at Indianapolis, Ind., but removed here about the first of 1932. Under the orders of court, all assets were inventoried and appraised, the business being operated in the interim to complete orders and carry on any good will and going business; but there being no apparent prospect of the receiver operating with a profit, the court ordered the property sold by public auction on July 12.

Sale has just been had, with a high bid of $400 for the entire assets; which your receiver has been compelled to accept.

The court has ordered all claimants who desire to participate in any distribution to file their varified claims either with the clerk of the court, at Crawfordsville, or with the receiver, not later than September 1, 1932.

Owners of 1,500,000 Business Vehicles Will Get the Issue of July 29

Fleet owners having 10 or more vehicles, 25,000 names, will receive the truck issue July 29th. Only Automotive Daily News can provide such wide extra distribution at no additional cost to the advertiser.

If you want to reach not only those owners but all exclusive truck dealers, important bus operators, 8,000 passenger car dealers and important factory officials, use that issue with a page at $350; half page at $175 or a quarter page at $87.50.

Forms close 2 days preceding publication.

Automotive Daily News

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N. S. P. A. SURVEY SHOWS TURNOVER RATE NON-VITAL

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tween the high and low figures represents more than 50 per cent of the rent paid, and in most cases it is more than the individual expenditures for advertising, taxes, insurance and many other expense items that tend to deplete net profit to the vanishing point."

A detailed analysis of profit and operating expenses grouped in the report according to net sales volume reveals the fact that of the fifty-one jobbers reporting the percentage of gross profit was greatest (36.56 per cent) in the group doing an annual volume of from $125,000 to $200,000 per year, as compared with 35.08 per cent in the "less than $75,000" volume group and 28.96 per cent in the "over $450,000" group.

Of particular interest in connection with the gross profit figures are the corresponding expense figures broken down into twenty-two classifications and showing in part that salaries, wages, bonuses and commissions account for 59 per cent of the average jobber's total expense.

The report includes further breakdowns of individual expense items, accompanied by constructive suggestions relative to their reduction.

In releasing this report to both jobber and manufacturer members N. S. P. A. headquarters announces that it is the first of a series of studies of jobber problems to be issued in the near future, including a survey of machine-shops costs, a study of jobbers' sales management problems and a report of all major lines carried by N. S. P. A. jobbers to determine the margin of profit returned by each.

OIL FIRMS FORM CORPORATION TO POOL PATENTS

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various processes. These relate solely to "fractional distillation" patents, or the advanced refining processes under which pure gasoline, kerosene or other products are obtained.

The operations of the new corporation will be along similar lines to Hydro Plants, Inc., the domestic licensing agent controlled by Standard Oil of New Jersey, to make available to the oil industry its discoveries and processes relating to refining of oil, coal, shale, etc., through hydrogenation. There will, however, be no direct connection between the two licensing companies. I. G. Farbenindustrie (German Dye Trust) ies the only other interest directly associated with the New Jersey company in Hydro Patents, although the German group and Imperial Chemical Industries of Great Britain are interested in the foreign company, International Hydro Patents, in which Standard Oil of New Jersey also is dominant.

T. G. Delbridge of the Atlantic Refining Company, has been named president of Petroleum Distillation Corporation, and J. J. Brown of Foster Wheeler Corporation and Robert E. Wilson of the Standard Oil Company of Indiana have been named vice-presidents. These three, together with L. B. Nutting of Foster Wheeler; E. R. Cox of Atlantic; B. K. Brown of Standard Oil of Indiana, and F. A. Howard and W. R. Carlisle of Standard Oil Development Company (Standard Oil of New Jersey), will form the board of directors.

SAM MURRAY, INC., SUCCEEDS BARKER-MURRAY AS DEALER

Miami, Fla., July 15.—Sam Murray, Inc., headed by Sam C. Murray as president and treasurer, has succeeded Barker-Murray Motor Company as authorized Ford dealers in Miami, with sales and service headquarters remaining in Biscayne Boulevard at 20th Street.

LIEUT.-COL. HACKING SAILS

Montreal, July 15.—Lieut.-Col. A. Hacking, who will represent the British Society of Motor Manufacturers at the imperial economic conference, which opens in Ottawa July 21, was a passenger on Empress of Britain, due in Quebec Monday.

SPARKS *from* DETROIT

Ye Salesman's Almanac
* * *
Plotting the Course
* * *
Count de Saknoffsky
* * *
Merit Men
* * *
Ye Prison Poet

Chris Sinsabaugh—Detroit Editor

STILL smelling of printer's ink, the july issue of Chrysler Sales Management is dumped on the old mahogany by one of Uncle Sam's minions. As usual, it bristles with original ideas, but one that registered with the column conductor was "Ye Salesman's Almanack," prepared by George Davis, made up of considerable common sense and with smile-provoking wisecracks as dessert.

"July VIIth mo. is plenty hot—but he who gets hot now will pocket the cool cash later. Jump in and go to it—the water's fine and the Zodiac signs are all strong for hustlers," it starts out.

For the 3d it announces that on this day in 1899 Alexander Winton "hits new production peak. Two orders pour in." The 5th is Calvin Coolidge's birthday, "best weather prophet in the U. S. A.," and on the 8th "Like Cal, pretty soon a bunch of jaloppies now on the roads won't 'choose to run.'" The 17th: "Take a ride now and then in some other makes to remind yourself how d—— much better these Chryslers are." The 29th: "Ezra Getzem says: 'My prospects are never right—as long as they say "No."'"

* * *

WHICH REMINDS ME of another alamanac, along different lines, just put out by the Rockne people. Frank Wiethoff, sales manager, is trying it for an experiment. Starting with July, he laid out a month's schedule for his dealers—just what to do each day of the month to produce business.

It strikes me as a new and original idea, and I quiver in anticipation of the report at the end of the month when the story can be told. Charting the month for the dealers seems like the sensible thing to do, and I believe Rockne dealers will appreciate the almanac and profit by following it.

* * *

COUNT ALEXIS DE SAKNOFFSKY, internationally famous body stylist, did not go to Europe for a summer vacation as planned. Instead he has postponed the trip until September, when he goes across for the shows.

The count has just taken over a new job—he has become art director of Rockne, and will put in three days a week studying its problems. The count, you know, is responsible for the Rockne 65 body, with its streamlined splasher and curved running boards. In addition to the Rockne job, he also is free lancing for Hayes Body and giving attention to styling De Vaux, Reo and Marmon.

* * *

ONE THING THAT CAME OUT of the three-day session of Cadillac-La Salle Merit Men in Detroit this week was the organization of the men who made their quota. The 125 salesmen who were entertained by Sales Manager John Chick sold 20 per cent. of the national Cadillac-La Salle retail business of the year.

R. B. Sloan of New York, who was elected president of the new organization, was the leading salesman in the national field, with a billing of $154,800. The other officers—First Vice-President E. D. Boehm of New York, Second Vice-President F. J. Balmer of Brooklyn, Secretary W. H. Couch of Stamford, Conn., and Treasurer M. W. Hallman of Rochester, N. Y.—each and every one sold in excess of $100,000 for the year.

* * *

RAY BLACKWELL, advertising manager of De Soto, has received from the San Francisco distributor, Jimmy Waters, an advertising layout idea that is unique in that it was written and illustrated by a prisoner in San Quentin Penitentiary. The theme is the one-hoss shay made famous by Oliver Wendell Holmes. One page quotes that poem and the other is a paraphrase of it written by the prisoner, in which the fine points of the De Soto are outlined.

Retail Salesmen—This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, successes, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen, the men on the firing line, the men who bring home the bacon or don't.

TAKE NOTHING FOR GRANTED IN SELLING CARS

When a writer in Automotive Daily News recently classified men who sell automobiles as "salesmen" and "assumers," he suggested a line of thought that every salesman may profitably follow.

Of course a died-in-the-wool assumer simply assumes all over the lot. He assumes that his customer knows as much about the car he is displaying as he does himself. He assumes that the client likes the car as well as he does. He assumes that he is going to get an order and usually assumes wrong. Your one hundred per cent. assumer is one because he has not taken the trouble to learn and so does not know the product he is selling or is too lazy or just a born idiot.

But there are degrees in the assumer family. A man may through carelessness or overanxiety or for some other reason be a good salesman for ninety per cent. of his presentation and then become an assumer for just one fatal moment. Let us illustrate by an actual case.

The sales manager of a New York dealership received a letter from a man bearing a name well known in business circles. This gentleman was interested in one of the company's cars. He was specific; he wanted a sport model similar to one owned by a friend, and he wanted it to drive himself back and forth between his apartment house and a golf club on Long Island.

Our friend the sales manager got a double kick out of the letter. Here was a chance to sell a well priced model, and furthermore, the car in the hands of a prominent man would probably breed further orders, or at any rate turn up some worthwhile prospects.

He handed the letter over to his star salesman. This man had been in the business with this same sales manager for five or six years. He made an excellent income selling cars, and he did it because he was a skillful salesman in the best sense of the word. So the star salesman took the letter also with rejoicing and departed in the model in which the well known business man had expressed interest.

The star salesman found his prospect, with whose picture the papers had made him familiar a little chubby man, shorter than he had expected from the newspaper photographs. He was a keen motorist and understood cars from rear wheels to radiator cap. He knew the particular car the star salesman was selling and spoke appreciatively about its many fine characteristics of design and performance.

They drove out to the golf club, with the star salesman at the wheel. The client seemed delighted with the performance of the car and invited the salesman to stop for luncheon. After the meal they started back and the salesman suggested that the prospect should drive. He did. He seemed to like the way the car handled, but the practiced ear of the star salesman caught a slightly lower note in his praise of the vehicle. Instead of the signed order at the end of the trip, as he had confidently expected, the star salesman got a few words of courteous thanks and a somewhat vague promise to "let you know what I decide."

The salesman scratched his head. He realized that he had missed somewhere along the line. He knew that he had answered every question the prospect asked about the car and answered it fully and completely. The man was thoroughly motorwise, obviously took a real interest in and had an enthusiasm for motor cars. But somewhere along the line the salesman knew that he had failed. He was modest enough not to blame it on the car.

A few days later the star salesman found a telephone call on his desk when he returned from a demonstration. It was a request to call the prominent business man when he got in. He called his prospect at his office and received a courteous request to bring the sport job around and let the client try it again.

This time they drove up into Westchester county and after they had shaken clear of the city the salesman moved over and let his prospect slip behind the wheel. The client drove the car, but again the salesman felt that something was wrong, not seriously, but the prospect's keen edge of enthusiasm had been dulled. Once again he did not get the order but another promise to let him know. And once again this earnest and hard-working salesman puzzled his brains to find out where he had missed.

Finally he took his troubles up with the sales manager, explaining that he felt sure that the prospect liked the car and that he was sure he had made some mistake in his presentation but could not figure out what. The sales manager doubted that his star had made any mistake, but finally lifted his finger:

"Ah, I wonder if that could be it?" he queried aloud. "Jim, did you let Mr. Blank drive the rig?

"Sure did," answered the star salesman. "He drove it twice and seemed to like it swell, except that there was some little thing that hung it all up."

"Listen, Jim," said the sales manager, "did you change the seat when you shifted Mr. Blank over under the wheel?"

"Why, no," replied the star salesman. "I never did think to do that, but that couldn't make so much difference as all that."

"Don't kid yourself, son," answered the sales manager. "You are six feet one, that little guy Blank isn't more than five feet six, if he's that. His legs could scarcely touch the pedals from the seat adjusted that let your legs sprawl all over the floor boards. Get him to take one more try and fix that driver's seat before you let him take the wheel."

The sales manager had struck the nail on the head. The star salesman finally managed to get his prospect out for one more demonstration and when he moved him over to take the wheel, he carefully adjusted the seat without saying a word. The prospect drove the car with satisfaction. The star salesman explained the operation of the adjustable seats and went back to the office with the signed orders for a clean sale.

The actual fact was that the well known business man was sensitive about his lack of height. He did not feel comfortable driving with the seat adjusted to the big salesman's measure, but his pride held him from bringing the subject up. He simply put off buying from time to time and probably would have ended by purchasing some other car.

Here we have the case of a skillful salesman playing the role of an assumer on just one point, which nearly lost him the sale. The fact that his client knew cars and even the model that he was demonstrating threw the salesman off the track. He assumed that the prospect knew so much about cars that if we were uncomfortable he would ask to have the proper adjustment made. But the prospect's sensitiveness regarding his lack of height kept him still and nearly lost our friend his sale.

The moral is that the truly earnest salesman will not assume anything. He must be ever on the alert for motives and objections, even though his customers do not put them in words. If our friend had pointed out the adjustable feature in the seats and had tactfully demonstrated it, the client would have been completely satisfied on the first ride, and the salesman would have gone home with the signed order in his pocket.

There used to be a saying, which came from the late A. G. Spalding, we believe: "Take nothing for granted in baseball." We can steal that and say: "Take nothing for granted in selling cars."

FIELD FOR AMERICAN TRACTORS IN FAR EAST

Washington, July 15.—Importation of tractors in larger numbers into the Netherland East Indies is predicted in an article in a recent issue of Commerce Reports, issued by the Department of Commerce.

The most likely sales outlets will be in road construction, in oil fields and in logging operations, it was pointed out. Thus far, the oil fields in Sumatra, sugar estates and the government have been the largest users of tractors. The statement follows in full text:

Although Netherland India is primarily an agricultural country of great importance, the market for tractors is relatively small. Owing to lack of official statistics it is impossible to accurately state the number of tractors imported during the past ten years, but it is estimated at not over 200, less than half of which are now in operation.

Today's $5 Winner

THREE LINES OF ATTACK BANISH DEPRESSION

By MAX M. WARSHAW

Senior Partner, General Manager Nevins Auto Company, Lawrence, Mass.

PONTIAC DEALER

I am writing my experiences in dealing with the automobile problem because I feel that it will be of some interest to other dealers who may read it. I feel that it is no longer a question of how much *more* money a dealer will make, or of how much *more* business he is going to do this year; to be in business, or not to be, that is the question. Inasmuch as every dealer will eventually be forced to face this question, why not do so now?

In the middle of March this year we realized that the results on our statements were slowly changing color—from black to red. The volume of sales could promise no better than 50 per cent. of that of last year. Our overhead was riding on our shoulders like the old man of the sea. The total operating expenses during last year and the first two months of this year amounted to approximately $6,000 monthly. Used car sales were at a standstill. By a comparison in the records of new car registrations in our district and with the stock of used cars of the other dealers in our town, we saw that ours was not the only case of this sort—others were in the same state of stagnation. Also, customers' labor in the service department had fallen off to about 50 per cent. of last year's and there was no hope of relief in sight. Something radical had to be done.

There were three angles from which the problem could be attacked: (a) cut overhead expenses, (b) increase the volume of customers' labor, and (c) trade used cars more sanely and wisely.

We have tried to put all three of these measures into force, and our results seem satisfying. In the the first item, we cut the salaries of executives, salesmen, bookkeepers and mechanics. Rental and demonstrating expenses were cut to a minimum. Extra telephones and extensions were eliminated. We gave up the lot which we had formerly kept for used cars; the large electric sign in front of our establishment is not lit at night during the summer months, since it is light enough until 9 o'clock, and there is no need for it. By the time we got through with these economies, the overhead expenses were reduced from $6,000 a month to $3,600.

The second problem was dealt with in an equally businesslike manner. In order to increase the customers' labor, we issued cards offering twelve monthly greasing jobs for $1. We sold three hundred of these to our used and new-car owners. In this way we have at least three hundred customers coming into our service station once a month. Once they are there, it is only a matter of salesmanship as far as other labor is concerned. Furthermore, in keeping with the times we reduced the labor charges to customers 25 per cents per hour, realizing that all wage earners had taken a proportionate cut. We wished to do our share and show our customers that we were in harmony with the general economic program.

Our efforts in the third direction were the most logical under the circumstances. We feel that we have completely licked the inevitable and universal used car problem. Yet we do not wish to give the impression that we took no licking in the process. Far from it! But now that we have stood up and taken it on the chin, we can go on free from that burden. At this time last year we had on hand forty-five units and at the present time we have only eight. In addition, this represents only 1930 and 1931 automobiles. It has cost us a lot to reach this state, and with the help of the gods of Olympus we intend that it shall be the last time such a measure shall have to be taken.

With eight units on hand and with five salesmen, we have each of our salesmen driving a used car constantly, except on new car demonstrations. This has made it possible to give up the large lot that we have had, in which to show the used cars, and eliminates the maintenance of forty-five used cars and the daily care entailed. Our policy from now on is to allow for used cars only what they will actually bring in. I will say this for the situation that we found ourselves in, neither the salesmen or the general manager could foresee in January and in February the drop in values of used cars. The only way that we could determine what the used car was actually worth was by the price received for it. However, this experience, although expensive, has been worth every cent that it has cost us, because we have learned and benefited by it.

Another angle to this reduction is that while we, as well as other dealers, formerly carried from $10,000 to $15,000 worth of used car stock on hand, we have now less than $3,000 worth. This difference in inventory is being carried either in cash or in new cars. And, furthermore, since this money is being invested in new car stock, we can save on the interest. These are the facts of our reductions to meet the crying need for a balanced budget.

The last precaution that we have taken was to reduce the amount of accounts receivable past due. Inasmuch as we have more time through less business, we can devote it to pressure on this item. We have reduced our accounts receivable past due in the past two months from $3,000 to $1,000, and are continuing our efforts in that direction.

To sum it all up, we are still in black—though not in mourning—in spite of the fact that we do not hope to reach more than 50 per cent. of last year's volume.

A. D. N. Offers Dealers $1 00 for Letter

This Newspaper Will Pay $100 for Best Letter of Month, $5 for Best Letter Each Day. Read Offer Below

IT has been decided to broaden a little the rules of the prize contest which Automotive Daily News is now running. Instead of offering prizes for letters from dealers who are doing more business than they did last year, we now include all dealers, even though they may not be exceeding the profits they earned in 1931.

Therefore, Automotive Daily News offers a monthly prize of $100 for the best letter from any dealer, telling how he has managed to keep his business out of the red this year, or giving the most constructive idea on how to increase profits, even though his own business may not be exceeding that of 1931. The plan is to pass on to other dealers methods, systems or ideas that will help them get more out of this reluctant market. The editors of Automotive Daily News will be the judges of which letter is best, and prizes will be awarded by them, their judgment being final.

Furthermore, Automotive Daily News will publish every day the best letter received that day and will pay the dealer writing it $5.

Get busy, you dealers, and grab yourselves $100 or a consolation $5, by passing on to your fellows the recipe that is enabling you to make money in a tough year.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Automotive Daily News

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SATURDAY, JULY 16, 1932

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Your Money or Your Life!

Through Harry Bragg, general manager of the Automobile Merchants' Association of New York, the board of directors of that energetic organization suggests to us that we reproduce an editorial that appeared in a recent issue of Liberty, the national weekly. Having read the editorial with keen interest when it appeared, we are very glad to call it to the attention of our readers. We do so because the editorial offers constructive advice to car owners in general, suggests a line of argument that automobile dealers and salesmen may use as a potent sales point at the present time. Liberty's editorial is as follows:

Which do you value the most—your life or your money?

The answer to that question is apparent to everybody, but people are everywhere sacrificing their lives in the madness of money-getting.

And there is one phase of economy at this time that is growing more dangerous year by year. Police authorities are everywhere mystified because of the continuous increase in the mortality record in automobile traffic. Some claim that the automobile lights are given an undue amount of attention, and that drivers and pedestrians are not watched with the same care as they were previous to the use of these warning signals.

But it is now maintained that the real cause of the increase in automotive accidents is the use of old, worn-out cars.

The old car is fixed up year after year; brakes, steering gears—all important parts are repaired or renewed. "We cannot afford the price of a new car"—and that is a very good excuse. Many people are unable to make the investment required; they usually congratulate themselves on their economical attitude.

Everybody should save in these times; but rarely or never do they realize that in many cases they are playing with their own lives and the lives of their loved ones. If a car owner thought for an instant that patching up an old car would endanger the lives of himself and his family he would make almost any sacrifice rather than run such a serious risk. And dangers of that sort should be considered.

One of our friends states that while driving with his family on a recent occasion the old brakes slipped, and it was only by sheer luck that a serious accident was avoided. And he asks: "What price economy?"

He states that he saved a few hundred dollars by driving his old car another year; but if the failure of the brakes had wiped out his whole family, or put them in a hospital, or contributed in any way to their injury or death, it would have been a source of life-long regret.

Not only are old cars a source of danger to the occupants, but they are equally, if not more, dangerous to other cars in fast-moving traffic. There are many antiquated machines seen on the road that ought to be condemned to the junk yard, and the occupants of such cars are often seen rattling along at a furious pace. When a driver sees such cars ahead he usually hurries past the "ramshackle," or else falls far in the rear.

The spirit of economy which is prevalent everywhere at the present time is absolutely necessary in most instances, but human life should never be endangered.

The various states of the nation and the Federal government are spending millions every year to make traveling on our highways safer. Grade crossings "blind" crossings, poorly surfaced roads, insufficiently lighted thoroughfares—all are coming in for a share of attention from the constituted authorities.

With these millions being expended in the cause of safety, how foolish it is for the private citizen to lessen the benefits of these works by some trifling false economy.

The new cars of today are easily handled; they hold the road with great precision. If these cars were in universal use there should be fewer accidents. If you are using an old car, take unusual precautions to keep it in perfect order; the money saved may be unimportant if you are endangering the lives of your lived ones.

In This Corner....

Opinions, suggestions, complaints, criticisms, grievances or what have you. Open to every one to say anything, anyhow, any time. The communications printed in this department represent the ideas and opinions of our readers. They are not necessarily ours. If you have something to say on any phase of automotive activity, wholesale, retail or abusive, let us hear from you and we will tell the world.

Ah There, Chris, You Old Log Roller, You

The Automotive Daily News: We note that Mr. Chris Sinsbaugh has rested from his labors of eulogizing his pets long enough to make some comments pertaining to companies, i. e., the Gemmer Manufacturing Company of Detroit.

We note that in the third paragraph of his comments on the Gemmer Manufacturing Company under the heading, "Another Unusual Publication," he states:

"Since then Gemmer . . . and at the present time it is selling its product to the Chrysler Corporation, Cord, Ford, Franklin, Hudson, Hupmobile, Lincoln, Nash, Stutz, Willys-Overland, Federal Truck and International Truck in this country, etc."

We would suggest that Mr. Sinsabaugh refer to the specificational tabulation appearing occasionally in his own Automotive Daily News and note that Gemmer steering gears are not used in any International trucks.

Quite likely Mr. Sinsabaugh will reply that he didn't mean International Harvester trucks, but he meant Mack International trucks. In that case he would be incorrect with both references, because there are no International Harvester trucks—there are International trucks manufactured by the International Harvester Company, and on the other hand there are no International trucks manufactured by the Mack Company. They are Mack trucks manufactured by the Mack International Company.

We just thought we would submit this information because from our very occasional reference to the Sparks from Detroit, we have never found a case where Mr. Sinsabaugh was willing to admit an error, even in the case of being unable to drive an automobile, as we have noted from time to time several people have made the definite statement that he could not drive an automobile, and yet he claims that he can, which we doubt very much.

FRED B. LAUTZENHISER,
Transportation Engineer, International Harvester Company, Chicago, Ill.

COMING EVENTS

JULY

17—Germany. Grand Prix Automobile Race.
17-19—Detroit. National Team and Truck Owners' Association.
20-22—Llandrindod, Wales. Commercial Car Show.

AUGUST

22-26—Denver, Col. American Chemical Society Convention.
30-Sept. 1—Cleveland. S. A. E. Aircraft Meeting.

SEPTEMBER

12-17—Cleveland. Machine Shop Practice Meeting, A. S. M. E.
15-17—Atlantic City, N. J. American Trade Association Executives Annual Meeting.
19-20—Harrisburg, Pa. Pennsylvania Automotive Association Convention.
22-23—Chicago. National Association Motor Bus Operators.

OCTOBER

3- 7—Buffalo, N. Y. National Metal Congress. Sponsored by American Society for Steel Treating, with co-operation of American Society of Mechanical Engineers, Institute of Metals and Iron and Steel Divisions of American Institute of Mining and Metallurgical Engineers, American Welding Society, Wire Association.
3- 7—Washington, D. C. National Safety Council Meeting.
3- 7—Buffalo, N. Y. National Metal Exposition, 174th Regiment Armory. W. H. Eisenman, 7016 Euclid Ave., Cleveland, director.
4- 6—Toronto. Transportation Meeting, S. A. E.
13-22—London, England. Olympia Show.
17-22—Atlantic City, N. J. National Hardware Association, Accessories Branch.

NOVEMBER

14-16—Atlanta, Ga. National Tire Dealers' Association.

DECEMBER

2- 3—Chicago. National Standard Parts Association Convention.
5- 9—New York. Annual Meeting A. S. M. E.
5-10—New York. Power and Mechanical Engineering Exposition.
5-10—Detroit. Third Annual Joint Trade Show, National Standard Parts Association and Motor and Equipment Manufacturers' Association, Convention Hall.

"Already safety is looming as a possible motive for a new assault upon the consumer's complacency in his present car ownership. It is likely to prove effective, for 79 per cent of those consumers who were interviewed expressed an interest in having safety glass in their next car. Safety Glass, safety tires, more safe control, stronger bodies, more stable equilibrium, all will make owners of tomorrow think in terms of new motor cars. Increased speeds at which motor cars of the future will travel will continue to make such features seem necessary."

. . . from "The Passenger Car Industry", recently published by the Curtis Publishing Company, a Report of a Survey made by Charles Coolidge Parlin, manager of the Commercial Research Division, and Fred Bremier, assistant.

the handwriting on the wall

Some months ago the results of an authoritative survey in which approximately 150,000 motorists were questioned, were made public. They showed that 45% of all motorists injured in automobile accidents were cut by broken, flying glass. Furthermore, 85% of those answering stated that, when choosing between two cars of equal reputation and performance, they would select the car with Safety Glass in preference to the other *even if the cost of this protection made the price of the car slightly higher.* ¶ The figures recently compiled by the Curtis Publishing Company likewise show very definitely that the public wants Safety Glass and that it is bound to be a sales factor of ever increasing importance. Surely, the end toward which these indications point is obvious. The handwriting on the wall is very plain indeed. Safety Glass will help sell cars. Any car without it must very soon be obsolete.

LIBBEY-OWENS-FORD GLASS CO., TOLEDO, O., manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corporation of Kingsport, Tennessee . . . L·O·F Safety Glass is used by Packard, Graham, Studebaker, Franklin, Reo, Willys, Willys-Knight, Ford, Cadillac, La Salle, Lincoln and Nash. It is also used in Dietrich and Le Baron Custom Bodies, Reo Speed Wagons, Twin Coaches, Brill Trolley Buses, Cincinnati Trackless Trolley Coaches, Bender Bus Bodies, Hackney and Springfield School and Passenger Bus Bodies, White School Buses, York-Hoover School Bus Bodies, Stinson and Stearman Aircraft, Gar Wood Boats, Matthews Cruisers and Chris-Craft Cruisers and Runabouts.

LIBBEY·OWENS·FORD
SAFETY GLASS

PASSENGER CAR EQUIPMENT AND ACCESSORIES

MAKE AND MODEL	Speedometer	Clock	Fuel Gauge	Lock	Spark Plugs	Battery	Heat Indicator	Cig. Lighter	Non-Shatter Glass	Heater	Horns Make & No.	Adjustable Seats?	FREE WHEELING: Make	FREE WHEELING: Clutch Control	FREE WHEELING: Synchro Mesh	Trunk Rack	Trunk	Windshield Wings	Wired for Radio	Color Options	Wheels	Wire or Wood	Spring Covers	Shock Absorber
Auburn 8-100	—	—	—	—	Cha	USL	—	Cas	—	—	—	—	LGS	No	Yes	C	—	—	No	C	**	—	—	Del-RC
Auburn 12-160	—	—	—	—	Cha	USL	—	Cas	—	—	—	Yes	LGS	No	Yes	Yes	—	—	No	Yes	**	—	—	Hou-RC
Austin	NE	NO	K-S	B-S	Cha	USL	No	No	No	No	—	—	—	—	—	—	—	—	No	—	—	—	—	Own
Buick 32-50	AC	—	AC	Oak	AC	DR	AC	No	§LOF	—	DR-1	—	BW	Yes	Yes	No	—	—	No	Yes	K-H	Wo	—	Del-RC
Buick 32-60	AC	—	AC	Oak	AC	DR	AC	No	§LOF	No	DR-1	—	BW	Yes	Yes	No	—	—	No	Yes	K-H	Wo	—	Del-RC
Buick 32-80	AC	—	AC	Oak	AC	DR	AC	Cas	§LOF	—	DR-1	—	BW	Yes	Yes	No	—	—	No	Yes	K-H	Wo	—	Del-RC
Buick 32-90	AC	—	AC	Oak	AC	DR	AC	Cas	§LOF	—	DR-1	—	BW	Yes	Yes	No	—	—	No	Yes	K-H	Wo	And	Del-RC
Cadillac 370B	AC	Jag	AC	DR	AC	DR	AC	Cas	LOF	—	DR-1	—	No	No	Yes	No	—	—	Yes	No	K-H	Wi	And	Del-RC
Cadillac 452B	AC	Jag	AC	DR	AC	DR	AC	Cas	LOF	—	DR-1	—	No	No	Yes	No	—	—	Yes	Yes	K-H	Wi	And	Del-RC
Cadillac 355B	AC	Jag	AC	DR	AC	DR	AC	Cas	LOF	—	DR-2	—	No	No	Yes	No	—	—	Yes	No	K-H	Wi	And	Del-RC
Chevrolet	AC	—	AC	DR	AC	***	AC	—	$	*	—	—	—	No	Yes	—	—	—	No	—	Own	Wi	—	Del
Chrysler 6	—	No	Yes	—	—	—	Yes	Cas	$	*	— 1	—	—	Yes	—	$	$	$	No	—	—	Wi	§	RC
Chrysler 8	—	—	Yes	—	—	Wil	Yes	Cas	Dup	*	— 2	—	Yes	Yes	—	$	$	—	Yes	—	—	Wi	And	RC
Chrysler Imp. 8	—	Yes	—	—	—	Wil	Yes	Cas	Dup	*	— 2	—	—	Yes	—	Yes	$	—	Yes	—	—	Wi	—	RC
Chrysler Cust. 8	—	Yes	—	—	—	Wil	Yes	Cas	Dup	*	— 2	—	—	Yes	—	Yes	$	—	Yes	—	—	Wi	—	RC
Cord Front Drive	Ste	No	Mot-M	DR	Cha	USL	Ster	Cas	—	No	—	—	—	—	—	—	—	—	No	—	—	—	—	Hou
De Soto Six	NE	No	Mot-M	DR	AC	Wil	Yes	No	$	No	—	—	—	Yes	—	CCC	$	%	Yes	Yes	K-H	Wi	—	Del
De Vaux 6-80	Ste	No	Mot-M	Yale	Cha	Nat	Mot-M	No	—	No	—	—	—	No	—	—	—	—	No	—	—	—	—	Hou
Dodge Six	—	$	AC	DR	AC	Wil	AC	$	$	$	— 1	—	—	No	—	—	—	—	Yes	—	—	Wi	§	RC
Dodge Eight	—	$	AC	DR	AC	Wil	AC	$	$	$	— 1	Yes	—	Yes	—	—	—	—	Yes	—	—	Wi	And	RC
Essex Gr. Su. 6	Ste	—	Mot-M	Ele	AC	Ex	K-S	—	Dup	—	EA-1	Yes	WG	Yes	Yes	$	$	—	No	Yes	MW	¶	—	Mon-RC
Ford A	Own	No	Yes	Hurd	Cha	Own	No	—	Yes	—	—	—	No	No	Yes	—	—	—	Yes	—	—	Wi	—	Hou-RC
Ford V-8	Own	No	Yes	Hurd	Cha	Own	No	—	Yes	—	—	—	No	No	Yes	—	—	—	Yes	—	—	Wi	—	Hou-RC
Franklin Series 16	NE	Borg	Yes	Yale	Cha	Nat	No	Cas	LOF	No	—	—	BW	No	Yes	‖	‖	—	Yes	—	—	Wo	—	RC
Franklin V-12	NE	Borg	Yes	Yale	Cha	Wil	No	Cas	Yes	No	—	—	BW	No	Yes	‖	‖	—	Yes	—	—	Wo	And	RC
Graham 6	NE	—	K-S	Her	Cha	Wil	K-S	No	LOF	No	DR-2	Yes	WG	No	No	No	No	—	No	—	MW	Wi	No	Del
Graham 6 (1933)	Ste	—	K-S	Her	Cha	Wil	K-S	No	$	No	DR-2	Yes	—	Yes	Yes	No	No	—	No	Yes	MW	¶	No	Del
Graham 8	Ste	—	K-S	Her	Cha	Wil	K-S	No	—	No	DR-1	Yes	WG	No	Yes	No	No	—	No	—	MW	¶	No	Del-RC
Hudson Great 8	Ste	—	Mot-M	Ele	AC	Ex	K-S	—	Dup	—	EA-1	—	WG	Yes	Yes	Su	Su	—	No	Yes	—	Wi	—	Gab-RC
Hupmobile 216	Ste	No	Mot-M	Ele	Cha	Wil	Mot-M	No	§Dup	No	—	—	WG	No	Yes	S	—	—	Yes	Yes	MW	¶	—	Gab-RC
Hupmobile 222	Ste	No	Ste	Ele	Cha	Wil	Ste	No	§Dup	No	—	—	WG	No	Yes	S	—	—	Yes	—	MW	¶	—	Gab-RC
Hupmobile 226	Ste	No	Ste	Ele	Cha	Wil	Ste	Cas	§Dup	No	—	—	DG	No	Yes	S	—	—	Yes	—	MW	¶	Yes	Gab-RC
La Salle 345B	AC	Jag	AC	DR	AC	DR	AC	Cas	LOF	—	DR-2	—	No	No	Yes	—	—	—	Yes	TS	K-H	Wi	And	Del-RC
Lincoln V-8	NE	Wal	K-S	Oak	Cha	Ex	Mot-M	Cas	$	No	—	—	Yes	No	Yes	P	—	—	Yes	—	Own	Wi	And	Hou-RC
Lincoln 12	NE	Wal	K-S	Oak	Cha	Ex	Mot-M	Cas	$	No	—	—	Yes	No	Yes	P	—	—	Yes	—	Own	Wi	And	Hou-RC
Marmon 8-125	NE	$	AC	DR	Cha	Nat	AC	—	—	—	—	—	No	Yes	Yes	—	—	—	Yes	Yes	Day	Wi	—	Gab-RC
Marmon 16	AC	Jag	AC	DR	Cha	Ex	Mot-M	Cas	—	—	SW-1	—	No	No	Yes	Yes	—	—	Yes	Yes	MW	Wi	And	Hou-RC
Nash Big 6	Ste	No	K-S	Her	AC	USL	K-S	No	§Dup	No	SW-1	—	DG	No	Yes	CS	CS	—	Yes	Yes	MW	¶	—	Del-RC
Nash Standard 8	Ste	No	K-S	Her	AC	USL	K-S	No	§Dup	No	SW-1	—	DG	No	Yes	CS	CS	—	Yes	Yes	MW	¶	—	Del-RC
Nash Special 8	Ste	No	K-S	Her	AC	USL	K-S	No	§LOF	No	SW-1	—	DG	No	Yes	CS	CS	—	Yes	Yes	MW	¶	Yes	Del-RC
Nash Advanced 8	Ste	Borg	K-S	DR	AC	Ex	K-S	Cas	§LOF	No	SW-1	—	DG	No	Yes	CS	CS	—	Yes	Yes	MW	¶	Yes	Del-RC
Nash Ambas. 8	Ste	Borg	K-S	DR	AC	Ex	K-S	Cas	§LOF	No	SW-1	—	DG	No	Yes	B	B	—	Yes	Yes	MW	¶	Yes	Del-RC
Oldsmobile F-32	AC	No	AC	BS	AC	DR	AC	Yes	§LOF	—	DR-2	—	BW	No	Yes	No	No	—	No	—	K-H	¶	—	Lov-RC
Oldsmobile L-32	AC	No	AC	BS	AC	DR	AC	Yes	§LOF	—	DR-2	—	BW	No	Yes	No	No	—	No	—	K-H	¶	—	Lov-RC
Packard Stand. 8	NE	Jag	K-S	Yes	AC	Pre	Mot-M	Cas	LOF	No	SW	—	—	No	Yes	CV	CV	—	Yes	Yes	MW	Wi	Yes	Del-RC
Packard De Luxe 8	NE	Jag	K-S	Yes	AC	Pre	Mot-M	Cas	LOF	No	SW	—	—	No	Yes	CV	CV	—	Yes	Yes	MW	Wi	Yes	Del-RC
Packard Light 8	NE	No	Yes	Yes	AC	Pre	Mot-M	Cas	LOF	No	SW	—	—	Yes	Yes	—	—	—	Yes	Yes	MW	Wi	Yes	Del-RC
Packard Twin Six	Wal	Wal	Yes	Yes	AC	Pre	Mot-M	Cas	LOF	No	SW	—	—	Yes	Yes	CSV	CSV	—	Yes	Yes	MW	Wi	Yes	Del-RC
Pierce-Arrow 54	NE	Borg	K-S	Her	Cha	Wil	K-S	Cas	Dup	No	DR-1	Yes	WG	No	Yes	††	††	No	Yes	Yes	K-H	Wo	And	Del-RC
Pierce-Arrow 52	NE	Borg	K-S	Her	AC	Wil	K-S	Cas	Dup	No	DR-1	Yes	WG	No	Yes	††	††	No	Yes	Yes	K-H	Wo	And	Del-RC
Pierce-Arrow 53	NE	Borg	K-S	Her	AC	Wil	K-S	Cas	Dup	No	DR-1	Yes	WG	No	Yes	††	††	No	Yes	Yes	K-H	Wo	And	Del-RC
Plymouth	NE	$	Yes	Sha	AC	Wil	Yes	$	§Dup	—	— 1	Yes	Own	Yes	No	—	—	—	Yes	—	K-H	¶	—	Del-RC
Pontiac 6	AC	No	AC	DR	AC	DR	AC	No	§LOF	—	— 1	Yes	BW	No	Yes	—	—	—	No	—	K-H	Wi	Yes	Lov-RC
Pontiac V-8	AC	No	AC	DR	AC	DR	AC	No	§LOF	—	— 2	Yes	BW	No	Yes	—	—	—	No	—	K-H	Wi	Yes	Lov-RC
Reo "S"	Ste	No	K-S	DR	Cha	Wil	AC	No	No	No	— 1	Yes	—	Yes	Yes	§§	§§	—	Yes	No	M-W	Wi	$	Del
Reo Royale Cust.	Ste	Elgin	K-S	DR	Cha	Wil	AC	Cas	$	No	—	—	—	No	SHG	—	—	—	Yes	—	—	—	—	Del
Reo Royale	Ste	No	K-S	DR	Cha	Wil	AC	Yes	—	No	—	—	—	No	SHG	—	—	—	Yes	—	—	—	And	Del
Reo 825	Ste	—	K-S	DR	Cha	Wil	AC	Yes	$	No	— 1	—	—	No	SHG	—	—	—	Yes	—	M-W	Wi	And	Del
Rockne 6-65	Ste	No	K-S	Aut	Cha	Wil	K-S	—	§Lof	No	SW-1	Yes	BW	No	Yes	—	—	—	Yes	—	K-H	Wi	And	Del
Rockne 6-75	AC	No	K-S	Aut	Cha	Wil	K-S	—	§Lof	No	SW-1	Yes	BW	No	Yes	—	—	—	Yes	—	K-H	Wi	And	Hou
Studebaker 6-55	Ste	No	AC	DR	Cha	Wil	Ste	No	†	No	SW-1	Yes	BW	No	Yes	Yes	Yes	—	Yes	Yes	K-H	Wi	And	Hou
Studebaker Dic. 62	Ste	No	AC	DR	Cha	Wil	Ste	No	†	No	SW-1	Yes	BW	No	Yes	Yes	B	—	Yes	Yes	K-H	Wi	And	Hou
Studebak'r Com.71	Ste	No	AC	DR	Cha	Wil	Ste	No	†	No	SW-1	Yes	BW	No	Yes	B	B	—	Yes	Yes	K-H	Wi	And	Hou-RC
Studebak'r Pres.91	Ste	Borg	AC	DR	Cha	Wil	Ste	Cas	†	No	SW-1	Yes	BW	No	Yes	B	B	—	Yes	Yes	K-H	Wi	And	Hou-RC
Stutz L AA	Ste	Wal	Mot-M	DR	Cha	Nat	Mot-M	Cas	Dup	—	DR-1	Yes	—	No	Yes	—	—	—	No	Yes	M-W	Wi	—	Gab
Stutz MA	Ste	Wal	Mot-M	Her	Cha	Nat	Mot-M	Cas	Dup	—	DR-1	Yes	—	No	Yes	Co	—	Sp	No	Yes	K-H	Wi	—	Gab
Stutz MB	Ste	Wal	Mot-M	Her	Cha	Nat	Mot-M	Cas	Dup	—	DR-1	Yes	—	No	Yes	Co	—	—	No	Yes	K-H	Wi	—	Gab
Stutz DV 32	Ste	Wal	Mot-M	Her	Cha	Nat	Mot-M	Cas	Dup	—	DR-1	Yes	—	No	Yes	Co	—	—	No	Yes	K-H	Wi	—	Gab
Willys-Ov. 6-90 A	NE	No	Yes	Aut	Cha	USL	Yes	S-R	§LOF	No	—	Yes	Own	No	Yes	—	—	S-R	No	—	K-H	Wi	—	Mon-R-C-C
Willys-Ov. 8-88 A	NE	No	Yes	Aut	Cha	USL	Yes	C	§LOF	No	— 2	Yes	Own	No	Yes	—	—	S-R	No	—	K-H	Wi	—	Mon-R-C-C
Willys-Knig't 66 E	NE	Wal	Yes	Aut	Cha	USL	Yes	Yes	LOF	No	— 2	Yes	Own	No	Yes	Sp	—	—	No	—	K-H	Wi	—	Mon-R-C-C

KEY TO ABBREVIATIONS

AC—A. C. Spark Plug Company, Flint, Mich.
And—Anderson Mfg. Company, Cambridge, Mass.
Aut—Electric Auto-Lite Co., Toledo, O.
B—Brougham.
BS—Briggs-Stratton Co., Milwaukee, Wis.
BW—Borg Warner Corp.
Borg—Geo. W. Borg Corp.
C—Custom Models.
CCC—Convertible Custom Coupe.
Co—Coupe.
CS—Convertible Sedan.
CSV—Convertible Sedan and Victoria.
CV—Convertible Victoria.
CAS—Casco Products Corp., Bridgeport, Conn.
Cha—Champion Spark Plug Co., Toledo, O.
DG—Detroit Gear and Machine Co., Detroit, Mich.
DR—Delco Remy Corp., Anderson, Ind.
Day—Dayton Wire Wheel Corp.
Del—Delco Products Corp., Dayton, Ohio.
DUP—Duplate Corp., Pittsburg, Pa.
EA—E. A. Laboratories, Brooklyn, N. Y.
Ele—Mitchell Specialty Co., Holmesburg, Pa.
Elgin—Elgin Watch Co., Elgin, Ill.
Ex—Electric Storage Battery Co., Philadelphia, Pa.
Gab—Gabriel Company, Cleveland, O.
Her—Hershey Mfg. Co., Chicago, Ill.
Hou—Houde Engineering Corp., Buffalo, N. Y.
Hurd—Hurd Lock Co. Almont, Mich.
Jag—Jaeger Watch Company, N. Y. City.
KH—Kelsey Hayes Wheel Corp.
K-S—King Seeley Corp., Ann Arbor, Mich.
LGS—LGS Corp.
LOF—Libbey-Owens-Ford Glass Company, Toledo, O.
Mon—Monroe Auto Equipment Mfg. Co., Monroe, Mich.
Mot-M—Moto Meter Gauge and Equipment Corp., L. I. City, N. Y.
MW—Motor Wheel Corp., Lansing, Mich.
NE—North East Appliance Corp., Rochester, N. Y.
Nat—National Lead Battery Co., St. Paul, Minn.
Oak—Oakes Products Corp., Chicago, Ill.
P—Phaeton.
Pre—Prest-O-Lite Company, Indianapolis, Ind.
RC—Ride Control
S—Sedan
Sch—Schwarze Electric Co., Adrian, Mich.
SHG—Synchronized Herringbone Gear.
Sp—Speedsters.
SR—Sport Roadster.
SU—Suburban.
SW—Sparks Withington Co., Jackson, Mich.
Sha—Shaler Lock Co., Milwaukee, Wis.
Ste—Stewart Warner Speedometer Corp., Chicago, Ill.
Ster—Sterling Clock Co., La Salle, Ill.
TS—Town Sedan.
Thom—Seth Thomas Clock Co., N. Y. City.
USL—USL Battery Corp., Niagara Falls, N. Y.
WG—Warner Gear Co., Muncie, Ind.
Wal—Waltham Watch Co., Waltham, Mass.
Wi—Wire.
Wil—Willard Storage Battery Co., Cleveland, O.
Wo—Wood
Yale—Yale and Towne Mfg. Co., Stamford, Conn.
*Various makes.
**Motor Wheel Corp., wood wheels; Dayton Wire Wheels optional.
***Using USL and DR batteries.
†Using LOF and Duplate Safety Glass.
††Club Brougham, Club Sedan, Club Berline and Convertible Sedans.
§Optional.
§§Sport Sedan, Sport Coupe and Sport Convertible Coupe.
$Extra equipment at additional cost.
¶Wood or wire wheels optional.
%Phaeton, Roadster and Business Roadster.
‖Seven Sedan, Limousine, Pirate Touring and Pirate Phaeton.

Ford and Hudson Output Hold Detroit Limelight

(Continued from Page 1)

seem as if sales are holding up remarkably well, all things considered.

It had been expected there would be a slowing up following the rush to buy because of the Federal tax. But it looks now as if the buyers are not as fearful of the tax as the factories anticipated. Since tax-ax day sales have held a fairly even level and executives are surprised in consequence. How to attribute the holding up of the market is a puzzler, but some think that undoubtedly there are many cars on dealers' floors which are still tax free and that it will be impossible to get a true line on the situation for another couple of weeks. There are optimists who believe the public has accepted the tax as a necessary evil and that it is still buying cars regardless of the extra payment.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

SEARS TIRE PRICES REMAIN UNCHANGED; TAX TO BE ADDED

(Continued from Page 1)

that other retail outlets would do likewise at the same time.

Conversations to this end have thus far failed to bring about an understanding on this point, with the result that tire and tube prices generally have remained unchanged.

Prior to July 4 Sears put out a special circular urging tire users to buy promptly, "as these prices are subject to change without notice." This circular is said to have brought in considerable business.

Catalogue for first time lists the addresses of the company's 392 retail stores. Catalogue sent out from each of the ten mail order houses lists the nearest stores to each particular house.

For the first time the catalogue explains at some length the relative merits of mail order and retail buying and the economies which accrue to the customer who is willing to order by mail. Differences between mail order and retail operation, which lead to higher retail than mail order prices, are gone into at some length.

The current catalogue has 1,049 pages, against 1,192 pages in the corresponding book last year.

MOBILE WANTS MORE GASOLINE TAX GRAVY

Mobile, Ala., July 15 (UTPS).—An additional tax of 1 cent a gallon has been proposed by the city officials to finance paving projects. A 1 cent tax has been levied on gas for the past five years, netting an average of $70,000 per year.

MIAMI BATTERY EXCHANGE OPENS FOR BUSINESS

Miami, Fla., July 15.—The Miami Battery Exchange, a new concern, has been opened by R. D. Catts at 1749 N. Miami Ave. He will handle practically all makes of batteries, including those manufactured Miami.

FINANCIAL NEWS

MURRAY CORPORATION

Detroit, July 15.—Murray Corporation of America and subsidiaries for four months ended April 30 reports net loss of $1,067,948 after interest, depreciation, etc. Consolidated balance sheet as of that date shows total assets of $26,713,217, comparing with $28,132,270 on Decemer 31, 1931. Current assets, including $1,430,223 cash, amounted to $6,401,812, and current liabilities were $653,757. This compares with cash of $3,357,967, current assets of $7,287,659, and current liabilities of $872,739 on December 31, 1931.

LEE TIRE

Conshohcken, Pa., July 15.—Lee Rubber and Tire and subsidiaries as of April 30 show total assets of $11,407,977 comparing with $11,290,268 on October 31, 1931, and earned surplus of $435,741, against $486,660. Current assets, including $757,032 cash, amounted to $3,963,501, and current liabilities were $1,084,537, comparing with cash of $660,221, current assets of $3,840,905 and current liabilities of 949,812 on October 31, 1931.

GASOLINE PRICES

New York, July 15.—Refinery and retail gasoline prices and crude oil quotations moved slightly lower last week, according to the J. Edward Jones research department. The average f. o. b.-refinery price of U. S. motor grade gasoline in nine refinery districts on July 9 was 6.088 cents a gollon, against 6.266 cents in the previous week and 4.022 cents a year ago.

FIGHT ON HIGHWAY TRANSPORT TAXES PLANNED AT MEETING

(Continued from Page 1)

ciation, viec-chairman; Chester Gray, American Farm Bureau Federation, vice-chairman, and L. J. Taber, National Grange, secretary-treasurer.

A committee on personnel and program was then appointed for the purpose of perfecting plans.

Members present at the meeting were: Chester H. Gray, American Farm Bureau Federation; A. C. Pearson, National Publishers Association; Ernest N. Smith, American Automobile Association; Alfred P. Sloan, Jr., National Automobile Chamber of Commerce; Amos L. Beaty, American Petroleum Institue; George E. Clinton, International Association of Milk Dealers; C. E. Childe, National Industrial Traffic League; Frederick C. Brenckman, National Grange, representing L. J. Taber; J. D. Tew, Rubber Manufacturers Association; Willard Chevalier, McGraw-Hill Company; Herbert P. Sheets, Retailers' National Council, and Emory Rice, American Bakers' Association.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

Make and Model	Weight—5-P. Sedan	Wheel Base	Engine Make	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp.	Compression Ratio	Tax H. P.	Brake, H.P. and Peak R. P. M.	Pist. Make or Material	No. Main Br.	Oil Purifier	Fuel Cleaner	Carburetor	Air Cleaner
Auburn 8-100	3675	127-136	Lyc	Dole	L	8	3 x4¾	268.6	5.26	28.8	100@3400	*Alum	5	Pur	No	Str	AC
Auburn 12-160	4465	133	Lyc	Dole	HO	12	3⅛x4¼	391.1	5.50	46.8	160@3400	*Alum	4	Pur	Ste	Str	AC
Austin	§1150	75	Own	No	L	4	2.2 x3	45.6	5.10	7.80	13@3000	Alum	2	No	No	Til	No
Buick 32-50	3450	114	Own	Bish-Bab	O	8	2⅞x4¼	230.4	5.09	27.61	82@3200	CI	5	AC	AC	Mar	AC
Buick 32-60	3980	118	Own	Bish-Bab	O	8	3⅛x4⅝	272.6	5.03	30.02	95@3000	CI	5	AC	AC	Mar	AC
Buick 32-80	4450	126	Own	Bish-Bab	O	8	3⅛x5	344.8	4.80	35.12	113@3200	CI	5	AC	AC	Mar	AC
Buick 32-90	4565	134	Own	Bish-Bab	O	8	3⅛x5	344.8	4.80	35.12	113@3200	CI	5	AC	AC	Mar	AC
Cadillac 355 B	4885	134–140	Own	Har	L	8	3⅜x4 11/16	353.0	5.38	36.4	115@3000	CI	3	AC	AC	Own	AC
Cadillac 370 B	5175	134–140	Own	Har	O	12	3⅛x4	368.0	5.30	46.9	135@3400	CI	4	Cuno	AC	DL	AC
Cadillac 452 B	5625	143–149	Own	Har	O	16	3 x4	452.0	5.36	57.5	165@3400	CI	5	Cuno	AC	DL	AC
Chevrolet	2770	109	Own	No	O	6	3 7/16x3¾	194.0	5.20	26.3	60@3000	CI	3	No	Yes	Car	AC
Chrysler 6	3120	116	§Own	Yes	L	6	3¼x4½	223.9	5.35	25.35	82@3400	*Alum	4	Pur	Yes	B & B	Yes
Chrysler 8	3860	125	§Own	Yes	L	8	3¼x4½	298.6	5.20	33.80	100@3400	*Alum	5	Pur	Yes	Str	Yes
Chrysler Imp. 8	——	135	§Own	Yes	L	8	3½x5	384.8	5.20	39.20	125@3200	*Alum	9	Pur	Yes	Str	Yes
Chrysler Imp. 8 cus.	——	146	§Own	Yes	L	8	3½x5	384.8	5.20	39.20	125@3200	*Alum	9	Pur	Yes	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	Dole	L	8	3⅛x4½	298.6	5.25	33.8	115@3300	*Alum	5	Pur	AC	Sch	No
De Soto Six	3008	113	§Own	Yes	L	6	3¼x4¼	211.5	5.35	25.35	75@3400	*Alum	4	Pur	Yes	B & B	Yes
De Vaux 6-80	2810	114	Con	Dole	L	6	3⅜x4	214.7	5.20	27.34	75@3600	Alum	4	—	Yes	Til	AC
Dodge Six D L	3084	114¼	§Own	Yes	L	6	3¼x4⅜	217.7	5.35	25.35	79@3400	*Alum	4	Pur	Yes	Car	Yes
Dodge Eight D K	3488	122	§Own	Yes	L	8	3¼x4¼	282.1	6.20	33.80	100@3400	*Alum	5	Pur	Yes	Str	Yes
Essex-Gr. Su. 6 Std.	2870	113	†Own	No	L	6	2 15/16x4¾	193.0	5.50	20.7	70@3200	Alum	3	No	Ste	Mar	AC
Ford A	2357	106	Own	No	L	4	3⅞x4¼	200.5	4.60	24.03	50@2600	Alum	3	—	—	Zen	—
Ford V8	†2447	106	Own	No	L	8	3 1/16x3¾	220.0	5.50	30.0	65@3400	Alum	3	—	—	DL	—
Franklin Series 16	——	132	*Own	Ful	O	6	3½x4¾	274.0	5.12	29.4	100@3100	*Alum	7	Pur	Yes	Str	Yes
Franklin V-12	——	144	*Own	Ful	O	12	3¼x4	398.0	5.12	50.8	150@3100	*Alum	7	Pur	Yes	Str	Yes
Graham 6 (1933)	——	118	Own	Yes	L	6	3¼x4½	224.0	6.50	25.35	80@3400	*Alum	7	No	AC	Sch	AC
Graham 6	3205	113	Own	Yes	L	6	3⅛x4½	207.0	5.45	23.4	70@3200	*Alum	7	No	AC	Sch	AC
Graham 8	3665	123	Own	Bish-Bab	L	8	3⅛x4	245.4	6.50	31.25	90@3400	*Alum	5	AC	AC	DL	AC
Hudson Gr. 8 Std.	3270	119–126–132	†Own	No	L	8	3 x4½	254.1	5.80	28.8	101@3600	Alum	5	No	Ste	Mar	AC
Hupmobile 216	3115	116	Own	Bish-Bab	L	6	3⅝x4¼	228.1	5.00	27.34	75@3200	*Alum	4	**	Ste	Str	AC
Hupmobile 222	3580	122	Own	Bish-Bab	L	8	2 13/16x4⅝	250.7	5.40	27.61	93@3200	Alum	5	Pur	Ste	Str	AC
Hupmobile 226	3755	126	Own	Bish-Bab	L	8	3 1/16x4¾	279.9	5.47	30.10	103@3200	Alum	5	Pur	Ste	Str	AC
La Salle 345 B	4840	130–136	Own	Har	L	8	3⅜x4 11/16	353.0	5.38	36.4	115@3000	CI	3	AC	AC	Own	AC
Lincoln V-8	5430	136	Own	Yes	L	8	3½x5	384.0	5.23	39.2	125@2900	Alum	5	No	AC	Str	AC
Lincoln V-12	5750	145	Own	Yes	L	12	3¼x4½	448.0	5.25	50.7	150@3400	Alum	7	No	AC	Str	AC
Marmon 8	3500	125	Own	Yes	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	Flo	AC	Str	AC
Marmon 16	5360	145	Own	Pines	O	16	3⅛x4	490.8	5.75	62.5	200@3400	Alum	5	†	AC	Str	AC
Nash Big Six	3200	116	Own	Bish-Bab	L	6	3⅛x4⅜	201.3	5.10	23.4	70@3000	*Alum	7	Pur	AC	Str	AC
Nash Stand. Eight	3400	121	Own	Bish-Bab	L	8	3 x4⅜	247.4	5.10	28.8	85@3200	*Alum	9	Pur	AC	Str	AC
Nash Spec. Eight	3870	128	Own	Bish-Bab	O	8	3⅛x4¼	260.8	5.25	31.2	100@3400	*Alum	9	Pur	AC	Str	AC
Nash Adv. Eight	4350	133	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.25	36.4	125@3600	*Alum	9	Pur	AC	Str	AC
Nash Ambas. Eight	4510	142	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.25	36.4	125@3600	*Alum	9	Pur	AC	Str	AC
Oldsmobile F-32	3035	116½	Own	No	L	6	3 1/16x4⅛	213.3	5.80	26.3	74@3200	CI	4	AC	AC	Str	AC
Oldsmobile L-32	3165	116½	Own	No	L	8	3 x4¼	240.3	5.90	28.8	87@3350	CI	5	AC	AC	Str	AC
Packard Twin Six	5225	142–147	Own	Yes	L	12	3 7/16x4	445.5	6.00	56.0	160@3200	*Alum	4	Yes	Yes	Own	AC
Packard Stan. 8	4570	130–137	Own	Yes	L	8	3⅜x5	320.0	6.00	32.5	110@3200	*Alum	9	Yes	Yes	Own	AC
Packard De L. 8	5045	142–147	Own	Yes	L	8	3½x5	384.8	6.00	39.2	135@3200	*Alum	9	Yes	Yes	Own	AC
Packard Light 8	4115	127¾	Own	Yes	L	8	3⅜x5	320.0	6.00	32.50	110@3200	*Alum	9	Yes	Yes	Own	AC
Pierce-Arrow 54	4819	137–142	Own	Pines	L	8	3½x4⅜	366.0	5.05	39.2	125@3000	*Alum	9	Pur	Ste	Str	AC
Pierce-Arrow 52	5080	142–147	Own	Pines	L	12	3⅜x4	429.0	5.05	54.6	150@3200	*Alum	7	Pur	Ste	Str	AC
Pierce-Arrow 53	5395	137–142	Own	Pines	L	12	3¼x4	398.0	5.05	50.7	140@3200	*Alum	7	Pur	Ste	Str	AC
Plymouth	2875	112	§Own	No	L	4	3⅝x4¾	196.1	4.90	21.03	65@3000	Alum	3	Yes	AC	B & B	Yes
Pontiac 6	2870	114	Own	Yes	L	6	3 7/16x3⅞	200.0	5.10	26.3	65@3200	CI	3	No	AC	Mar	Yes
Pontiac V-8	3225	117	Own	Yes	H	8	3 1/16x3⅜	251.0	5.20	37.8	85@3200	CI	3	No	AC	Mar	Yes
Reo Fly. Cloud "S"	3405	117	Own	Yes	L	6	3⅛x5	230.0	5.30	23.4	80@3200	Lo-Ex	7	Yes	Yes	Zen	Yes
Reo Royale Cust.	4650	135	Own	Pines	L	8	3⅜x5	358.0	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale	4375	131	Own	Pines	L	8	3⅜x5	358.0	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 8-25	4050	125	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	*Alum	5	Han	V S	Sch	Un
Rockne 6-65	2595	110	Own	Dole	L	6	3⅛x4⅛	189.8	5.00	23.4	66@3200	CI	4	No	AC	Str	No
Rockne 6-75	3000	114	Own	Dole	L	6	3¼x4⅛	205.3	5.00	25.4	72@3200	CI	4	Own	AC	Str	No
Studebaker 6-55	3170	117	Own	Dole	L	6	3¼x4⅝	230.0	5.00	25.4	80@3200	CI	4	No	Ste	Str	No
Studebaker Dict. 62	3240	117	Own	Bish-Bab	L	8	3 1/16x3¾	221.0	5.00	30.0	85@3200	CI	9	Pur	Ste	Str	AC
Studebaker Com. 71	3545	125	Own	Bish-Bab	L	8	3 1/16x4¼	250.4	5.20	30.0	101@3200	*Alum	9	Pur	Ste	Str	AC
Studebaker Pres. 91	4260	135	Own	Dole	L	8	3½x4⅜	337.0	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Stutz LAA	4383	127½	Own	No	O	6	3⅜x4½	241.5	5.50	27.3	85@3150	*Alum	7	Pur	AC	Zen	UN
Stutz SV-16	4885	134½-145	Own	No	O	8	3⅜x4½	322.0	5.10	36.4	156@3900	*Alum	9	Pur	AC	Zen	AM
Stutz DV-32	*5281	134½-145	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.50	36.4	113@3300	*Alum	9	Pur.	Ste	Str	AC
Will.-Ov'land 6-90A	2814	113	Own	Yes	L	6	3¼x3⅞	193.0	5.26	25.35	65@3400	CI	4	No	AC	Til	Til
Will.-Ov'land 8-88A	3250	121	Own	Yes	L	8	3⅛x4	245.4	5.26	31.25	80@3200	CI	5	No	AC	Til	AC
Willys-Knight 66E	3775	121	Own	Yes	K	6	3⅝x4¾	255.0	5.50	27.34	87@3200	*Alum	7	Pur	Til	Til	AC

Shop Practice in Fleet Operation*

By E. C. WOODS,
Superintendent of Transport, San Francisco Division, Pacific Gas and Electric Co.

Maintenance involves three important requisites, listed according to their importance.

First—Good shop practice.
Second—Efficient shop personnel.
Third—Trained drivers.

It is impossible to obtain economy and efficient operation of a fleet unless these fundamentals are realized. The degree of efficiency is dependent entirely upon the care given the equipment, whether in the shop or on the street.

Operating efficiency aims to get the most out of the equipment. It represents the prime purpose of the vehicle. The more the equipment is kept in service, the greater the operating efficiency.

Efficient maintenance is the means whereby this operating efficiency is maintained continuously, instead of occasionally, and if we are to have a system of maintenance, it should be of the "ounce of prevention is better than the pound of cure" sort.

What underlies sound maintenance?

First—How long will a piece of equipment last; what is its ultimate life?

Second—Can we measure the life in years, or miles?

From my point of view, maintenance is searching for mechanical troubles while they are small, in order to correct them before they become big. What, then, is more important and essential than:

(a) Right unit for the job.
(b) Good shop practice.
(c) Good shop organization.
(d) Proficient system of maintenance.
(e) Good driving personnel.

One of the important problems we have today is traffic hazards Cost of accident repairs due to street and highway congestion, and these burdens of the future will demand far greater study than has been given in the past.

While each particular line of business using motor vehicles has its own transportation problems, it has, on the other hand, problems that are more or less common to the fleet operators as a whole. As a rule, these problems have to do with maintenance. There is no question but that they can be overcome more effectively with all fleet operators working together.

Speaking of co-operation, I want to take this opportunity of expressing my appreciation to several gentlemen for their efforts the last three years, as they have been responsible for accomplishing considerable in Operation and Maintenance Com. S. A. E., American Petroleum Institute (A. P. I.), Automotive Council of Los Angeles, Corporation Automotive Engineers, San Francisco.

Pacific Telephone & Telegraph Co., Van Dennis O. R. Cole, C. H. Bolin; Southern California Telephone Co., Col. William Fairbanks; San Diego Gas & Electric Co., Charles Weiss; San Joaquin Light & Power Co., J. M. Wainscoat; Southern California Edison Co., P. H. Ducker; Pacific Gas & Electric Co., S. B. Shaw; Los Angeles Gas Co., William Schaeffer; Coast Counties Gas & Electric Co., A. E. Strong; Key Route Transit Co., William Penfield; City of Berkeley, E. Meybem; State of California, R. H. Stalnaker; Portland Gas & Coke Co., H. W. Drake; American Railway Express Co., F. R. Maulsby; Union Oil Co., E. Power; Standard Oil Co., J. C. Bennett; Shell Oil Co., D. Darisson; Lathan & Company, A. H. La Fleur; University of California, L. Boelter; Moreland Company, E. Favary; Mack Company; A. T. Smith; White Company, F. Sargent.

It is hoped that this paper may be of some assistance to the fleet manufacturers. It is our intention to try to cover some of the more important points which affect maintenance and operation problems.

Performance in the hands of the fleet operator is a real criterion of the value of motor vehicles. These values can be measured only by the reports, such as maintenance and operation cost. In the last anlysis, operating costs of motor vehicles find their way into the cost of doing business. There is one important point that should be brought out at this time, and that is the closer co-operation between the factory service departments and the fleet operator. The engineering department also should have contact with these men, and it can be realized that this co-operation can bring out facts and figures that are well worth while to all concerned. There is no question but that the changes in the original design should be sent on to the fleet operators, and that mechanical failures, in turn, should be reported to the factory. If these two important factors can be brought about, it would be a progressive step in the right direction.

The development of the motor vehicle during the last year has caused the most rapid and most spectacular change in the history of automotive engineering. What has this meant to the fleet operator in this regard? The maintenance men appreciate that these changes have brought about economies, but, nevertheless, the important factor of premature obsolescence has also taken its toll.

As the operation of motor vehicles becomes more and more a science, the operators are coming to realize that their big problem is how to keep the equipment working at a reasonable cost. They also

(Continued on Page 8)

*This paper was presented at the recent section meeting of the S. A. E. in San Francisco.

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmission Make	Transmission Speeds	Transmission Type	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Springs Rear	Spring Shackles	Chassis Lubric.	Tires
Auburn 8-100	Chain	Del-R	*Del-R-S	Long	D	3	SM-LGS-F	U	Col	*4.70	M	Ross	S 56¾	Own	Bijur	*17x5.50
Auburn 12-160	Link	Del-R	*Del-R-S	Long	D	3	SM-LGS-F	M	Col ½	*4.08	Bendix	Ross	S 56¾	Own	Bijur	*17x6.00
Austin	Gear	Aut-L	*Aut-L	Rock	WG	3	——	S	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 32-50	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ½	4.60	Own	Sag	S 56	Own	Al-Z	18x5.50
Buick 32-60	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ¾	4.54	Own	Sag	S 55¼	Own	Al-Z	18x6.00
Buick 32-80	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ¾	4.27	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Buick 32-90	Tex	Del-R	Del-R	*Own	O	3	SM-Own-F	O	Own ¾	4.36	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Cadillac 355 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.60	Own M	Sag	S 58	Own	Alem	17x7.00
Cadillac 370 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.80	Own M	Sag	S 58	Own	Alem	17x7.50
Cadillac 452 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.64	Own M	Sag	S 60	Own	Alem	18x7.50
Chevrolet	Gear	Del-R	*Del-R	Own	O	3	SM-F	—	Own ½	4.10	M	Own	S 54	Own	Alem	18x5.25
Chrysler 6	Chain	Del-R	Del-R	*—	O	3	—— F	—	Own ½	4.60	H	Own	S 53⅜	——	Alem	18x5.50
Chrysler 8	Chain	Del-R	Del-R	*—	O	4	—— F	—	Own ½	4.30	H	Gem	S 54⅝	——	Al-Z	17x6.50
Chrysler Imp. 8	Chain	Del-R	Del-R	*—	O	4	—— F	—	Own ½	4.10	H	Gem	S 57½	——	Al-Z	17x7.00
Chrysler Imp. 8 cus.	Chain	Del-R	Del-R	*—	O	4	—— F	—	Own ½	4.10	H	Gem	S 57½	——	Al-Z	17x7.50
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	D	3	——	*	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7.00
De Soto Six	Chain	Del-R	Del-R	*Own	O	3	O-F	—	Own ½	4.62	H	Own	S 53⅜	——	Alem	18x5.25
De Vaux 6-80	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	‡AD ½	4.40	M	†W	S 54¼	Tryon	Al-Z	19x5.25
Dodge Six D L	Chain	Del-R	—	—	O	3	—— F	—	Own ½	4.60	H	Own	S 54⅞	——	Al-Z	18x5.50
Dodge Eight D K	Chain	Del-R	Del-R	*—	O	3	—— F	—	Own ½	4.10	H	Gem	S 55	——	Al-Z	18x6.00
Essex-Gr. Su. 6	Morse	Aut-L	*Aut-L-S	*Own	O	3	SM-WG-F	S	Own ½	4.63	Bendix	Gem	S 54⅛	Own	Alem	18x5.25
Ford A	Var-G	Own	*Own	Own	O	3	SM	O	Own ¾	4.11	M	Gem	S-Tr 39	Own	Al-Z	18x5.25
Ford V8	Var-G	Own	*Own	Own	O	3	SM	O	Own ¾	4.11	M	Gem	S-Tr	Own	Al-Z	18x5.25
Franklin Series 16	Chain	Del-R	*Del-R-S	Br-L	W	3	SM-BW-F	M	Own ½	4.73	H	Gem	El 42	——	Al-Z	19x6.50
Franklin V-12	Chain	Del-R	*Del-R-S	Long	W	3	SM-BW-F	M	Col ½	5.10	H	Ross	S 60	Far	Al-Z	17x7.50
Graham 6 (1933)	Link	Del-R	Del-R	*Long	WG	3	SM	U	Sal ½	4.55	H	Ross	S 54	ERS	Al-Z	17x6.00
Graham 6	Link	Del-R	Del-R	Long	WG	3	WG-F	U	Sal ½	4.45	H	Ross	S 54	ERS	Al-Z	17x5.50
Graham 8	Link	Del-R	Del-R	Long	WG	3	SM-WG-F	S	Sal ½	4.30	H	Ross	S 54	ERS	Al-Z	17x6.00
Hudson Gr. 8	Morse	Aut-L	*Aut-L-S	*Own	O	3	SM-WG-F	S	Own ½	†4.63	Bendix	Gem	S 54⅛	Own	Alem	*17x6.00
Hupmobile 216	Chain	Aut-L	*A-L-S-§	Borg	WG	3	SM-WG-F	M	Spic ½	4.54	M	Ross	S 53	Tryon	Al-Z	18x5.50
Hupmobile 222	Morse	Aut-L	*A-L-S-§	Borg	WG	3	SM-WG-F	U	Own ½	4.36	M	Gem	S 57½	Rub-B	Al-Z	17x6.00
Hupmobile 226	Morse	Aut-L	*A-L-S-§	Long	D	3	SM-DG-F	U	Own ½	4.36	M	Gem	S 57½	Rub-B	Al-Z	17x6.50
La Salle 345 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.60	Own M	Sag	S 58	Own	Alem	17x7.00
Lincoln V-8	Chain	Aut-L	*Aut-L	Long	O	3	SM-F	S	Own F	4.58	*Bendix	Own	S 62	Own	Alem	18x7.00
Lincoln V-12	Chain	Aut-L	*Aut-L	Long	O	3	SM-F	S	Own F	4.58	*Bendix	Own	S 62	Own	Alem	18x7.50
Marmon 8	Diam	Del-R	*Del-R	*—	D	3	SM	S	Spic ½	4.08	Bendix	Ross	S 57	Tryon	Alem	18x6.00
Marmon 16	Diam	Del-R	Del-R	Rus	M	3	SM	S	Spic ½	3.78	Bendix	Ross	S 59½	**	Alem	18x7.00
Nash Lig Six	Chain	Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.70	M	Ross	S 54	ERS	Alem	18x5.25
Nash Stand. Eight	Chain	Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.44	M	Ross	S 54	ERS	Alem	18x5.50
Nash Spec. Eight	Chain	*Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.43	Bendix	Gem	S 55¾	*	Bijur	17x6.50
Nash Adv. Eight	Chain	*Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57½	*	Bijur	18x7.00
Nash Ambas. Eight	Chain	*Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57½	*	Bijur	18x7.00
Oldsmobile F-32	Chain	Del-R	Del-R	Borg	M	3	SM-BW-F	S	Own ½	4.56	Bendix	Sag	S 54½	Tryon	Al-Z	17x6.00
Oldsmobile L-32	Chain	Del-R	Del-R	Borg	M	3	SM-BW-F	S	Own ½	4.77	Bendix	Sag	S 54½	Tryon	Al-Z	17x6.00
Packard Twin Six	Morse	Aut-L	*Dyn	*Long	O	3	SM	M	Own ½	4.69	M	Own	S 60½	Own	Bijur	18x7.50
Packard Stan. 8	Morse	NE	*Dyn	Long	O	3	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	19x6.50
Packard De L. 8	Morse	NE	*Dyn	Long	O	3	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	19x7.00
Packard Light 8	Morse	NE	*Dyn	*Long	O	3	SM	S	Own ½	4.66	M	Own	S 56	Own	Alem	17x6.50
Pierce-Arrow 54	Chain	Del-R	*Del-R-S	Long	O	3	SM-WG-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	Myers	18x6.50
Pierce-Arrow 52	Chain	Del-R	*Del-R-S	Long	O	3	SM-WG-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	Myers	18x7.00
Pierce-Arrow 53	Chain	Del-R	*Del-R-S	Long	O	3	SM-WG-F	S	Own ½	4.58	Bendix	Ross	S 61	Faf	Myers	18x7.00
Plymouth	Var	Del-R	Del-R	*Own	O	3	O-F	O	Own ½	4.33	H	Own	S 53⅜	——	Al-Z	18x5.25
Pontiac 6	Chain	Del-R	Del-R	Own	M	3	SM-BW-F	M	Own ½	4.55	Bendix	Sag	S 54	Inlox	Al-Z	18x5.25
Pontiac V-8	Link	Del-R	Del-R	Own	M	3	SM-BW-F	M	Own ½	4.22	Bendix	Sag	S 54½	Inlox	Al-Z	17x6.00
Reo Fly. Cloud "S"	Chain	Del-R	*Del-R-S	Long	O	3	SM-F	S	Own ½	4.60	H	Ross	S 55	Tryon	Al-Z	17x5.50
Reo Royale Cust.	Morse	Del-R	Del-R-§	Long	O	3	SHG	U	Own ½	4.07	H	Ross	S 57½	Own	Far	18x6.50
Reo Royale	Morse	Del-R	Del-R-§	Long	O	3	SHG	U	Own ½	4.07	H	Ross	S 57½	Own	Al-Z	18x6.50
Reo 8-25	Link	Del-R	*Del-R	Long	O	3	SHG	U	Own ½	4.90	H	Ross	S 55¾	Own	Al-Z	17x6.50
Rockne 6-65	Morse	Aut-L	*Aut-L-S	Borg	WG	3	SM-BW-F	M	Spic ½	4.55	Bendix	Ross	S 54	Tryon	Al-Z	18x5.25
Rockne 6-75	Chain	Aut-L	*Aut-L-S	Long	WG	3	SM-BW-F	M	Own ½	4.73	Bendix	Ross	S 54	Tryon	Al-Z	18x5.50
Studebaker 6-55	Chain	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.27	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Dict. 62	Cel	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Com. 71	Cel	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.73	Bendix	Ross	S 56	Faf	Alem	18x6.00
Studebaker Pres. 91	Var-G	Del-R	*Del-R-S	Borg	O	3	SM-BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Alem	18x6.50
Stutz LAA	Link	Del-R	Del-R	Borg	D	4	——	U	Sal ½	5.10	H	Gem	S 60	Own	Bijur	19x6.50
Stutz SV-16	Link	Del-R	Del-R	Long	M	3	SM	M	Tim ½	4.75	H	Gem	S 62¾	Own	Bijur	*18x7.00
Stutz DV-32	Link	Del-R	Del-R	Long	M	3	SM	M	Tim ½	4.50	H	Gem	S 62¾	Own	Bijur	*18x7.00
Willys-Over. 6-90 A	Link	Aut-L	*Aut-L-S	Own	O	3	SM-F	S	Own ½	4.60	Bendix	Own	S 51	Tryon	Alem	18x5.25
Willys-Over. 8-88 A	Link	Aut-L	*Aut-L-S	Borg	O	3	SM-F	S	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	18x5.50
Willys-Knight 66E	Link	Aut-L	*Aut-L-S	Rock	O	3	SM-F	S	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	17x6.00

KEY TO ABBREVIATIONS

Weight — ‡Austin standard 2 passenger coupe. Stutz DV 145-inch wheel base weighs 5,352. †Tudor sedan.

Engine make—Con, Continental; Lyc, Lycoming. *Air-cooled with spot temperature control. †Thermo syphon water circulation. ‡Floating power.

Thermostat—Bish-Bab, Bishop & Babcock, Dole, Dole Valve Co., Chicago, Ill.; Ful, Fulton Co.; Har, Harrison; Pines, Pines Winterfront.

Valve arrangement—L, L head; H, horizontal; O, overhead; K, sleeve valve; HO, Horizontal Opposed.

Piston Material—*Alum, aluminum with invar struts. Alum. aluminum alloy CI cast iron. Lo-Ex, Aluminum Corporation of America.

Oil Purifier—Han, Handy; AC, AC Spark Plug Company; Flo, Floato; Cuno, Cuno Engineering Corp.; Pur, Purolator. †Using AC with Floato attachment. **Using both AC and Purolator.

Fuel Cleaner—AC, AC Spark Plug Co.; Ste, Stewart-Warner; Til, Tillotson; V-S, Van Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; B&B, Ball & Ball.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Un, United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; A-L, Auto-Lite; Del-R, Delco-Remy; Dyn, Owen-Dyneto Corp.; N E, North East. *Nash.—Indicates twin ignition. *Bendix starter used. S—Startix equipped. §Startix optional equipment.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co. *Bendix Clutch Control.

Transmission Make—D, Detroit Gear; WG, Warner Gear Company; M, Muncie Gear Company; O, Own; W, Warner Corp.

Transmission Type—DG, Detroit Gear & Machine Co.; LGS, The LGS Corp.; F, Free Wheeling; SM, Synchro Mesh; BW Borg-Warner; WG, Warner Gear Co.; SHG, Synchronized Herringbone Gear; O, Own.

Universals—U, Detroit Universal Products; S, Spicer Mfg. Corp.; O, Own; M, Mechanics Universal Joint Company. *Cord using Detroit Universal Products and Mechanical Universal Joint Co.

Rear Axle—Col, Columbia; Sal, Salisbury; Spic, Spicer Mfg. Corp.; Tim, Timken; ½, Semi-flotation; ¾, ¾ floating; F, full floating. ‡Adams used on custom models.

Ratio—*Dual ratio optional; †Hudson 132-in. wheel base models have rear axle ratio of 5.10.

Brakes — H, hydraulic; M, mechanical; Bendix, Bendix Brake Corp. *Equipped with Vacuum Booster.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B, Saylor-Beall Manufacturing Company; W, Warner Corp.; †Ross used on custom models.

Rear Springs — S, semi-elliptic; El, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse.

Spring Shackles — Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Faf, Fafnir Bearings Company; ERS, Eaton Products, Inc.; Inlox, Inland Mfg. Co. *Own, front. ERS, rear. **Using both Rubber-B and Fafnir.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Far, Farval. Myers - Chassis Lubricating Co.

Tires—Auburn 8 custom models equipped with 17x6.00. *Hudson 132-in. wheel base models equipped with tires 17x6.50. Stutz 145-inch wheelbase models have 20x7.00 tires.

JUNE CAR SALES IN INDIANAPOLIS SET HIGH FOR YEAR

(Continued from Page 1)

business reflected little increased buying, directly traceable to the Federal tax levy, others reported a spirited stimulation of buying and shopping. Generally it was felt that the tax question entered heavily into the month's showing, particularly in the case of business houses in need of cars and trucks. Individuals, it was found, were more reluctant to be listed as new car owners, simply for the purpose of saving the 3 per-cent. tax, and in many cases the tendency to "put it off a little longer" prevailed, leaving the prospect with his old car.

Plymouth pushed into second place behind Ford for the month, registering 175 cars out of a total of 915. This represented a gain of three units over sales for the month of May, when the floating powered four was second to Chevrolet with a total of 172 out of 881 for the entire list. Ford's June sales of 306 cars represented 33 per cent. of the total for the the month.

The total for June was approximately 5 per cent. behind that of the same month of last year, leaving the total registrations for the year between 35 and 40 per cent. behind that of the first six months of 1931. July business so far is reported extremely dull.

Truck registrations showed a negligible drop from May and were less than half the volume of a year ago in June.

KENTUCKY GASOLINE LAW HELD UNCONSTITUTIONAL

Edmonton, Ky., July 15.—Circuit Court Judge W. H. Fulton ruled July 12 that the law enacted by the 1932 General Assembly requiring manufacturers of gasoline to file a bond of $5,000 with the state tax commission and obtain a license to do business, was unconstitutional on the ground it was class legislation. The ruling does not in any way affect the 5-cent-a-gallon state tax on gasoline, however, it was explained.

SEALE MADE TRUCK SALES MANAGER FOR LAMBERTH

Dallas, Tex., July 15.—J. D. Seale, Jr., has been appointed commercial cars and trucks manager for the Lamberth Motor Company, Ford dealers, 3800-16 Main St., it was announced yesterday by H. D. Bradshaw, manager.

70

Manufacturers of Automotive Vehicles Equip with

ROSS

Roller Mounted CAM AND LEVER Steering

★

This is the most efficient steering gear ever developed and therefore is the *easiest steering, regardless of the type of tires used.*

★

See Fifth Column to Left

Please see the fifth column to the left, giving steering gear information. Notice the outstanding Ross predominance. This preference for Ross exists not only in the passenger car field, but in the truck and bus field and other divisions of the automotive industry as well. Passenger Car figures are:

ROSS 26

First Competitor 18

Second Competitor 12

Third Competitor 1

Build their own 12

206 Engineering Staffs Prefer Ross

Production--Engineering--Factory

AUTOMOTIVE FUELS, LUBRICANTS

By C. A. ARENTS
Oregon State College, Corvallis, Ore.
(THIRD INSTALLMENT)

Probably in the future this difference of 10 octane numbers present in the competitive, non-premium gasolines sold locally will become less and less. The oil companies selling gasolines in the low range of octane numbers, realizing that a gasoline with a high octane number is desirable for good motor performance, will raise the octane number of their gasoline, whereas the companies now selling non-premium gasoline with a high octane number will not increase this value a great deal, due to the prohibitive cost of plant required to produce such a gasoline.

The octane number of ethyl gasoline is 78 or above—78 being the required minimum, however, most of the coast ethyl blends have an octane number of 80 or above. The question now arises, "Does an increase in the octane number give a continual increase in engine performance in the average motor car of today?" It is my opinion that it does not, and this statement is based on actual tests. Since an increase in the octane number means controlled combustion or slowing down of the combustion rate it will be possible to slow the combustion to such a point that there will be an actual decrease in power. Indications seem to prove this fact. For the present day motor car in average mechanical condition, no improvement in performance will be noted about 74 octane number. If this value is exceeded an actual decrease in power may be experienced although the detonation has been completely removed.

SUMMARIZING

Comparing the major, coast, non-premium gasolines:

1. All gasolines had about the same volatility characteristics, and all gasolines had adequate quick starting qualities for the atmospheric temperatures encountered.

2. Since the gasolines had a sufficiently high 90 per cent. point, and since they only varied by 1 per cent. in their heating values, no appreciable difference in mileage would be noticed under non-detonating conditions.

3. Under detonating conditions there will be an appreciable difference in performance since the octane number varied from 61 to 71.

4. The gasolines were sufficiently pure and free from gum.

5. The utility value of the coast gasolines can most satisfactorily be measured by the octane number alone.

In general:

1. The difference in performance will vary as the octane number.

2. The average car of 1932 in good mechanical condition will require about a 65 octane number as a minimum and considerable improvement will be noticed up to 70 or 74 octane number, but no higher.

SECTION II—LUBRICANTS

The lubrication of the modern automotive engine, from the purely technical standpoint, offers a very difficult problem. There are so many variables in operating an engine that only one who is skilled can draw definite conclusions regarding the behavior of lubricating oil. There are several tests in vogue at the present time for determining the quality of a lubricating oil, viz., gravity, demusibility, Conradson carbon, pour point, sulfur, flash and fire, acidity, color and viscosity. The speaker considers gravity, demusibility, Conradson carbon, pour point, sulfur, flash and fire, acidity and color important only as check or regularity tests. This leaves one paramount property of an oil to be considered, and that property is viscosity. There is but little correlation between the results of the tests for the other properties and practical service results.

Since viscosity is such an important property it is well to have a clear concept of its meaning. For example, if the ends are knocked out of an apple box and in between these ends is placed a quantity of molasses, the ends are now slid past each other with great difficulty. Now, instead of using molasses, water is placed in between the two ends. They are now slid past each other with relative ease. This difference in the amount of pull or shearing stress in the medium required to move the two ends of the apple box past each other, using molasses and water was due to the viscosity or property of flow of the two liquids. The liquid offering the greater pull is said to have a high viscosity and the liquid offering the lesser pull is said to have a low viscosity. This brings out the fundamental idea of viscosity, but in defining viscosity the ends of the apple box used in the illustration are replaced by two planes of the medium itself one centimeter square separated by a distance of one centimeter. In the space is placed the substance whose viscosity is unknown. The planes are now caused to slide relative to each other at a rate of one centimeter per second. The force in dynes required to pull the two planes past each other is the coefficient of viscosity.

The necessary property of an oil is its ability to separate the surfaces in the moving parts of an engine to prevent metal-to-metal contact or excessive wear. It has been found that the co-efficient of friction, for fluid film lubrication, is proportional to ZN/P—where N is the number of revolutions per minute, Z is the absolute viscosity, and P is the pounds of pressure per square inch on the projected area of the bearing. This means that for automotive engines, the load carrying ability of an oil depends on its viscosity, and the higher the viscosity the greater the load that it will carry, and at the same time the greater will be the friction between the molecules of the oil at any speed and load. This friction resulting from a high viscosity oil increases the power loss and decreases the oil flow, thus cutting down the efficiency of the bearing. From this discussion it seems that an oil should be used that will possess low internal friction between the molecules and just maintain a film of oil on the point of breaking at maximum load. This would mean an oil with a low viscosity. If an oil of too low a viscosity is used, regardless of the higher efficiency due to a minimum fluid friction, the consumption would become so great that the cost of using such a lubricant would become prohibitive. The problem requires an oil that is of such a viscosity that the consumption is not too great to make the use of the oil prohibitive, and such that the internal friction is kept at a minimum. In other words there must be a balance between power loss and oil consumption with a satisfactory factor of safety to care for variations in operating conditions.

(To be continued)

DAYTON UNION TRUST FUNDS NOW AVAILABLE

Dayton, O., July 15 (UTPS). — Under the direction of Charles F. Kettering, vice-president of General Motors Corporation in charge of research, $8,400,000, tied up by the defunct Union Trust Bank, has been placed back into circulation.

Mr. Kettering, who is chairman of the board of the Winters Bank in charge of the distribution of the money to depositors, states that this $8,400,000 will naturally strengthen the whole financial situation of the community and will reduce the debt aggregate in the city by at least four or five times that amount.

ENGINEERED TRANSPORTATION

The Fruehauf Trailer Company is issuing a new edition of its booklet called "Engineered Transportation." Revision has been made in the cost tables, which are one of the most useful features of this booklet.

AUTOMATIC STARTER SWITCH

The Atlas Motor Products Company is placing on the market a new starter switch unit, designed especially for use on Ford and Chevrolet cars. This unit is controlled by a button, which is clamped on the dash in the most convenient location. When the engine stalls, or for an ordinary start, all that is necessary is to press this button.

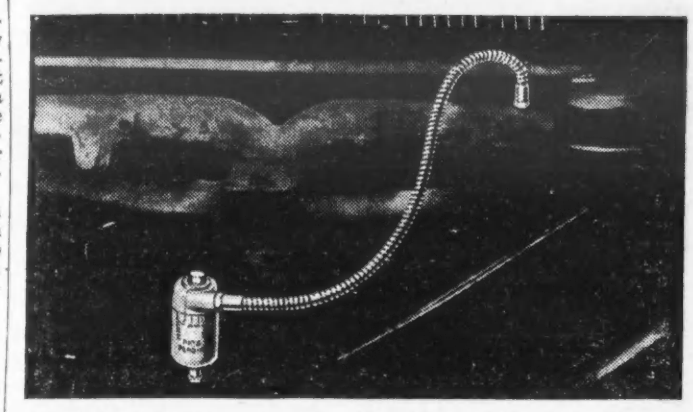
It is stated that the starter switch may be installed in less than ten minutes, there being no holes to bore, and a small wrench and a screwdriver being all the tools needed. The switch lists at $3.95.

JOYCE-CRIDLAND PLAN NEW $60,000 BUILDING

Dayton, O., July 15 (UTPS).—A new $60,000 plant is to be erected by the Joyce-Cridland Company, makers of joists and auto lifts, within the next sixty days, according to J. M. Switzer, president and treasurer of the company. The new plant, a one-story brick, steel and glass structure, is to be located on Woodley Road, one square south of Springfield Street.

About two and one-half acres of land have been leased from the Dayton Hydraulic Company, which will erect the building and lease it to the Joyce-Cridland Company, with the stipulation that it can be purchased within the next ten years if so desired.

Anti-Knock Device



The Fulton Company announces that the Rector harmonizer—anti-knock device—is ready for distribution to the automotive trade. The Rector harmonizer incorporates processes patented by Enoch Rector for controlling detonation in internal combustion engines. It was originally developed for use in connection with the Rector gasifier on heavy duty gasoline motors using low grade fuels.

The Rector harmonizer is a compact device. A receptacle which holds a perforated cartridge containing a compound having a lead base attaches directly to the air intake of any automobile. By means of a flexible tube connected to the exhaust manifold, exhaust gases forced through the receptacle release lead vapor, which is introduced into the air stream and mixes with the gasoline in the carburetor.

The installation of the Rector harmonizer is stated to be very simple. The harmonizer lists at $8.50 installed. The cartridge will serve for 3,000 to 5,000 miles and is replaceable. Refill cartridges have the same capacity and list at $1. The Fulton Company will manufacture and sell the harmonizer as the sole licensees under the Rector patents.

Shop Practice in Fleet Operation

(Continued from Page 6)

realize that the repair outages are a big cost in their operation. Also, they are concerned with such performance as laying out routes, greater load factor, scheduling and dispatching equipment; also the purchase of equipment to meet present day's demands and requirements. They are looking to the manufacturer for reducing weights, so as to give the operator the advantage of hauling a larger payload with the minimum gross weight, because after all, we are buying transportation and endeavoring to operate at the lowest cost per mile.

Methods of keeping records vary with different operators, due to the fact that their requirements differ. However, they are going to the cost-accounting systems, in order to arrive at what is an economical cost of operating motor vehicles. Some operators are operating on a mileage basis, a tonnage basis, an hourly basis, or on a cost per unit delivered basis, but all are reducing it down to a cost per unit in some way or other. The point is, they realize the importance of keeping costs, such as cost repair mile, tire cost per mile, fuel and oil cost per mile, sundries cost per mile and total cost.

During the last few years, particularly last year, fleet operators are constantly adding to and changing their method of maintenance. On an analysis, these are largely due to

1. Legislature.
2. Road speeds.
3. Manufacturers' changes (due to the constant demand of the owners to fleet operators for more economy).

There are a great many ways in which shop economies can be practiced, with a resultant saving that amounts to considerable; simplifying repairs, parts dismantled during overhaul, establishing the practice of checking each part carefully, first cleaning and then examining for flaws or breakage; if the part can be re-used, has it received its maximum life; a study made as to its mileage, and the topography of the country in which the vehicle is required to operate. The study of utilizing a part that has only short life left in it, balanced against the unusual service and the possibility of a breakdown. Balancing these costs one against the other. The point of standardization also enters into this question. The part may not be put back into the vehicle in question, but may be returned to the stock room where it will be available for use at some future date on a piece of equipment that does little mileage. These are some of the important items in salvage that are receiving attention.

There is an idea prevalent among the operators that motor vehicle efficiency is greater when a piece of equipment is torn down and completely rebuilt at certain given intervals. This may be the case where a fleet is composed of various makes of vehicles. It is difficult to predetermine any particular age, whether it be time or mileage, when a vehicle should be overhauled, judging from available statistics, it is the opinion that careful periodical inspections in conjunction with reports from drivers are not only economical in the vehicle's operation but also promote continuity in service. It seems that this question is a debatable one. Some operators are completely overhauling their vehicles. Others are overhauling by the unit-replacement system. Representatives of both sides of the question feel that their system of operation is the most economical. However, there is an important factor that enters into this situation; it is the difference between equipment centrally located and equipment scattered over large areas. This, I feel, is one of the deciding issues in this problem.

Much argument can be advanced for and against this system of periodical inspection, but, after all, it is the stitch in time. This seems to be the sane policy, and used by operators on the Pacific Coast. I think we will agree it eliminates expensive overhauling of the unit which might be necessary under other conditions.

From reports, a system for preventative maintenance has been adopted and considerable saving reported.

1. Has reduced their running equipment cost.
2. Reduced the necessity for buying spare equipment.

This preventative inspection system, from figures available, amounts to about 2½ hours per vehicle per week.

UNIT PLAN OF OVERHAULING

Where the actual repair of the component part involved consumes considerably more time than is taken by an exchange of a rebuilt unit for the worn unit, this is reported to reduce the idle time of the vehicle in the shop. With a few exceptions, operators feel that by installing a complete rebuilt unit the load factor is increased and the earning capacity of the vehicle is increased; also that this reduces the capital expenditure for spare pieces of equipment. This system is making considerable headway, and is replacing the old system of complete overhaul. A decrease of repair time is reported. So we have the three systems:

1. Complete overhaul.
2. Unit replacement.
3. Preventative maintenance.

SELECTING THE RIGHT PIECE OF EQUIPMENT

Heretofore, trucks were sold without regard to the requirements of the work they were supposed to do. Equipment was of too large a capacity or too small. Bodies were of incorrect design. However, progress is being made along these lines and quite a change in these conditions has been noticed in the last year or so. The manufacturers' representatives in sales organization are beginning to realize that it is to their advantage to place a piece of equipment that will do the job, and not merely to make a sale; and work with the prospective buyer and help from their experience to solve the problem. On the other hand, the purchaser is beginning to note from experience what is needed for the job; he has qualified to a certain extent to solve his problem and is able to specify the kind and type of equipment best suited for the work. One only has to refer to various trade journals—check up specifications to enlighten him in this regard, such as motors, transmissions, differential, rear axles, etc. In making this comparison you will uncover some very interesting data for future reference.

(To be continued)

COLUMBIA MACHINERY BUYS NOBLE TRUCK CORP. PLANT

Kendallville, Ind., July 15.—Sale of the plant of the Noble Motor Truck Corporation to the Columbia Machinery Company of Fort Wayne is announced here by U. C. Brouse, receiver.

Consideration for the deal involving the factory and equipment which has not been active in production for several years was not announced.